APPENDIX

TO THE

MONTHLY REVIEW,

VOLUME the SIXTY-FIFTH.

FOREIGN LITERATURE.

ART. I.

Hiſtoire de l' Academie Royale des Sciences, &c i. e. The Hiſtory and Memoirs of the Royal Academy of Sciences at Paris, for the Year 1775. 4to. 1778.

ANATOMY.

MEMOIR I. *Concerning the Effects of Mephitic Exhalations, exemplified by the Death of M.* LE MAIRE, *and his Wife, who lived in the Street* St. Honoré, at Paris, and were ſuffocated by the Vapour of Coal, the 3d of Auguſt, 1774. By M. PORTAL. The fact, that occaſioned this Memoir, excited the ſenſibility and compaſſion of the Public, and drew, in a particular manner, the attention of the Medical Faculty, to an object that frequently produces pernicious, and ſometimes fatal effects. A young couple, into whoſe apartment the vapour of coal, lighted in the hearth of a chimney, which had a communication with theirs, entered, loſt their lives in one day by this unhappy accident. M. PORTAL, who was called too late to their relief, here publiſhes the obſervations which accidents of this kind have furniſhed him with, that ſpeedy and well-directed ſuccours may not be wanting to thoſe who may hereafter be expoſed to the ſame danger.

In thoſe who die by the ſuffocation of coal-vapour, the animal heat remains for a conſiderable time; their members continue flexible, and the face is rather of a more lively and florid colour than it was in a ſtate of health. On opening the body, there is no blood found in the pulmonary veins, nor in the veſſels on the left ſide of the heart, while thoſe on the right ſide are full of blood, and thoſe of the brain are turgid and inflated in

a high degree. This diſorder is the natural and ordinary conſequence of the want of reſpiration, which is the cauſe of death in thoſe who are ſuffocated by mephitic vapours, ariſing either from coal, or ſubſtances in fermentation. The means of relief propoſed by our Academician are, phlebotomy, expoſing the body to freſh and renewed air, the application of cold water, the inſufflation of air into the lungs, and the uſe of ſtimulants. He inſiſts particularly on conveying air to the lungs by a tube applied to *one* of the noſtrils, while the *other* is ſtopped. This latter he conſiders as the ſafeſt and ſureſt method of conveying air to the lungs, as the application of the tube to the mouth may preſs down the uvula, which, in ſuch circumſtances, is naturally open, and thus increaſe the danger. When all theſe means prove unſucceſsful, M. PORTAL recommends opening the *arterea trachealis*, if an able ſurgeon can be found, who will venture upon ſuch a critical operation, which, indeed, is the laſt reſource. He looks upon the uſe of emetics, and the introduction of ſmoke of tobacco into the inteſtines, as dangerous; ſince the recovery of reſpiration is the great object in accidents of this nature.—The details into which M. PORTAL enters in deſcribing the alterations obſervable in the bodies of ſuffocated perſons; his enquiries into the cauſes from which theſe alterations proceed, and his manner of appretiating the different methods that may be employed for the relief of theſe unfortunate patients, render this Memoir highly inſtructive and uſeful.

CHEMISTRY.

Mem. I. *Concerning the Nature of the* PRINCIPLE *which is combined with Metals during their Calcination, and which augments their Weight.* By M. LAVOISIER. This ingenious Academician had proved in a former memoir, that metals, during calcination, abſorbed air, and that to this air they owed the real augmentation of their weight. He proved this, by ſhewing that a part of that portion of the atmoſpherical fluid, in which the calcination had been made, was abſorbed; and that the weight of the abſorbed part was equal to the additional weight which the metallic calx had acquired. But as the air of the atmoſphere cannot be conſidered as a fluid abſolutely pure, or as a ſimple element, it ſtill remained a queſtion, which of thoſe ſubſtances that compoſe the atmoſpherical fluid it is, that is combined with metals when they paſs into the ſtate of calxes. The ſolution of this queſtion is the ſubject of the preſent Memoir. As M. LAVOISIER was reducing metallic calxes by the addition of phlogiſton, he perceived an expanſible fluid diſengaging itſelf from the calx, which had all the properties of fixed air; but the ſame fixed air diſengages itſelf from burning coal, ſo that this reſult did not clear up the point in queſtion. He then bethought himſelf of reducing, in cloſed veſſels, precipitate *per ſe*,

ſe, or red precipitated mercury, a kind of metallic calx which is reducible without addition. From this he diſengaged an aerial fluid, better adapted to animal reſpiration than the common air of the atmoſphere, and alſo more capable of favouring and promoting combuſtion. This fluid is the ſame with that to which he has given the denomination of *air eminently pure*, which Dr. Prieſtley calls *dephlogiſticated air*, and which, when mixed with nitrous air, has the property of precipitating it under the form of ſpirit of nitre. The proceſs obſerved by our Author is largely deſcribed in this Memoir, and ſeems to prove evidently, that the principle which is combined with metals during their calcination, and which augments their weight, is nothing more than the pureſt portion of the air we breathe, which paſſes, in this operation, from a ſtate of expanſibility, to a ſtate of ſolidity. If, therefore, it be obtained in the ſtate of fixed air in all the metallic reductions where coal is employed, it is to the combination of the latter with the pure portion of the atmoſpherical air, that this effect is owing, and our Author thinks it highly probable that all the metallic calxes would, like thoſe of mercury, yield only an air eminently adapted to reſpiration, if they could be all reduced without addition, as is the caſe of the precipitate *per ſe*. Our Author draws another concluſion from the-above mentioned proceſs in the following words. ‘ Since the coal diſappears entirely in the reduction or revivification of calx of mercury, and nothing is obtained from that operation but mercury and fixed air, we muſt conclude, that the principle to which the denomination of *fixed air* has been hitherto given, is the reſult of the combination of the eminently pure portion of the air with coal. This I deſign to prove and illuſtrate in a ſatisfactory manner in ſome ſubſequent memoirs on this ſubject.’

Mem. II. *New Obſervations on the Nature and ſaline Properties of Zinc, in a metallic Form, or reduced to a Calx.* By M. De Lassone.

Mem. III. *New Details relative to the Action of volatile Alkalies on Zinc.* By the ſame. M. De Lassone, in a former memoir, had made it appear, by ſeveral facts, accurately compared and connected, that zinc, as well as arſenic, is poſſeſſed of metallic and ſaline properties. In the two Memoirs now before us, he examines the combination of volatile alkali with zinc, both in its ſtate as a metal and as a calx; and conſiders the phenomena which reſults from this combination. The ſolubility of zinc in volatile alkali was rather conjectured than known by the chemiſts. Our Academician proves, that volatile alkali, in a fluid form, diſſolves the filings of zinc with effervescence, and the flowers of zinc without effervescence, but, however, in a manner more expeditious and complete: the al-

kaline liquor muſt be ſaturated and employed immediately after the volatile alkali has been procured from ſal ammoniac by the intervention of fixed alkali.—This new combination of zinc has given M. De Lassone an occaſion of making ſome enquiry into the nature of this ſemi metal. Some noted chemiſts have looked upon it as a particular combination of iron; to which notion they were probably led by this circumſtance, that iron is obtained both in mines of zinc, and from zinc prepared in the mines. M. De Lassone endeavoured to procure Pruſſian blue, by precipitating the zinc from its ſolution in volatile alkali, and he ſucceeded ſometimes; but it was only when he employed in this operation either the zinc that is an object of commerce, or acids which contained a ſmall portion of iron. The zinc that had been previouſly purified in his elaboratory, and the acids which had been carefully prepared, yielded no Pruſſian blue. Our Academician concludes from hence that zinc is totally diſtinct from iron, though it has ſome lines of reſemblance to that metal, and is ſometimes mixed with it.

Mem. IV. *Concerning ſeveral Ammoniacal Salts.* By M. De Lassone. The Academician examines here the combinations of volatile alkali with the acid of vinegar, with cream of tartar, with the nitrous acid, with arſenic, and with ſedative ſalt.

Mem. V. *Concerning the Reduction or Revivification of Cal es of Copper.* By M. Tillet. This curious Memoir deſerves the attention of the gentlemen of the mint. Theory and practice unite here in pointing out the leaſt expenſive method of reducing calx of copper in the known operation of melting it with coal.

Mem. VI. *Concerning the Action of the Electrical Fluid on metallic Calxes.* By Meſſrs. Brisson and Cadet. Some learned philoſophers, and among others, F. Beccaria, publiſhed experiments, which proved, in their opinion, that the action of electricity reduces or revivifies metallic calxes, and thus produces the ſame effects that are obtained by the phlogiſton of the chemiſts. Our Academicians have proved the contrary in this Memoir, by the juſteſt reaſonings, and repeated experiments.

Mem. VII. *Obſervations on the Decompoſition of fulminating Gold.* By M. Sage. It appears from the reſearches of Mr. Bergman, that gold acquires this ſingular quality only by its combination with volatile alkali, or (which is more probable) with one of the principles of which that alkali is compoſed. M. Sage deſcribes, in this Memoir, a ſingular phenomenon, which accompanies the detonation of fulminating gold. When it is detonated on a plate of ſilver or copper, zinc or cobalt, the gold appears incruſted in the plate under a metallic form; but on tin, lead, biſmuth, antimony, and regulus of arſenic, the fulminating

fulminating gold is no more obſerved under a metallic form, but under that of calx of gold, more or leſs deep in colour. This calx, melted with white glaſs, produces glaſs of a violet hue; but the ſtrength of the colour varies according to the kind of metal on which the gold has detonated. If a ſolution of gold in aqua regia be precipitated with the metals on which the gold after detonation re-appears under a metallic form, the gold is precipitated under the ſame form; but gold is precipitated under the form of a calx, by the ſame metals on which, after detonation, it is found without its metallic form.

BOTANY.

This claſs contains a Memoir by Linnæus, concerning the *cyca* (a kind of plant, which by its ſize and external form ſeems related to the palm-tree genus, but which the Swediſh Botaniſt places among the ferns), and a ſhort account given by M. Du Hamel, of a ſingular excreſcence in the graft of an apple-tree.

ASTRONOMY.

Mem. I. *Oppoſitions of Mars, obſerved at Paris for ſeveral Years paſt, and compared with the Tables.* By M. DE LA LANDE.

Mem. II. *Elements of the Orbit of Mars, from the laſt Oppoſitions, calculated by a more ſimple Method than thoſe that have been hitherto employed.* By the ſame.

Mem. III. *Concerning the Conjunctions of Saturn with the Moon in February and March* 1775; *together with Reflexions on the Inaccuracy of the Tables.* By M. LE MONNIER.

Mem. IV. *Concerning the Conjunction of the Moon with Aldebaran, obſerved at the Paſſage by the Meridian, April* 1775. By the ſame. This conjunction may be employed to verify the greateſt quantity of the moon's variation, in the mean diſtances between the earth and the ſun.

Mem. V. *Obſervations of Jupiter, relative to his Oppoſition to the Sun, December* 8, 1775, *made at the Royal Obſervatory.* By M. JEAURAT.

Mem. VI. *Inquiries concerning ſeveral Points in the mundane Syſtem.* By M. DE LA PLACE. The ſubjects treated in this learned and elaborate Memoir, are, The law of gravity at the ſurface of homogeneous ſpheroids in equilibrio.—The phenomenon of the tides, the preceſſion of the equinoxes, and the nutation of the axis of the earth, which reſult from this phenomenon,—the oſcillations of the atmoſphere, occaſioned by the action of the ſun and the moon.

Mem. VII. *Obſervation of the Occultation of Saturn by the Moon, made at the Royal Obſervatory, the* 18*th of February,* 1775. By M. CASSINI DE THURY.

Mem. VIII. *The Occultation of Saturn by the Moon, made the ſame Day, in the Evening, at the Obſervatory of the Marine.* By M. MESSIER.

Mem. IX. and X. *relate to the Longitudes of Venice, Kiel, &c. and to the Oppoſition of Jupiter and Saturn, November* 1, 1774, *and March* 25, 1775. By M. De la Lande.

Mem. XI. *Obſervations on Saturn in* 1775, *towards the Time of his Oppoſition.* By M. Cassini de Thury.

Mem. XII. *New Analytical Methods of calculating the Eclipſes of the Sun, the Occultations of the fixed Stars, and Planets, by the Moon, and in general of reducing the Obſervations of the Moon made at the Surface of the Earth, to the Place ſeen from the Centre.* Twelfth Memoir. By M. Dionis du Sejour. In this Memoir, which contains above an hundred pages, the learned Academician applies to the ſolution of ſeveral aſtronomical problems, the equations of the preceding ones. There are various important articles diſcuſſed in this ample and moſt elaborate Memoir, ſuch as the errors occaſioned by refraction, the inflexion of the ſolar rays, and the obſervations that are the moſt adapted to aſcertain the quantity of the inflexion of thoſe rays that paſs near the limb of the moon. Our Academician moreover conſiders the *law* by which inflexion varies relatively to the diſtance between the limb of the ſun from that of the moon: He applies the preceding theories to the obſervations made at London, April 4th, 1764, by Mr. *Short*, and at Pello, by M. Hellant; and he offers ſome conjectures concerning the cauſe, which, in occultations of the ſtars by the moon, makes the ſtar appear on the moon's diſk.

Mem. XIII. *An Eclipſe of Saturn by the Moon, with the conſequences reſulting from thence.* By M. De la Lande.—XIV. *Obſervation of the Occultation of* Aldebaran *by the Moon, April* 4*th*, 1775, *at the Obſervatory of the Marine.* By M. Messier.—XV. *On the tenth Comet, at the Obſervatory of the Marine, from the Month of Auguſt, to the* 1*ſt of December*, 1769. By the ſame.—XVI. *On the ſixteenth Comet, at the Obſervatory of the Marine, Paris, from the* 18*th of Auguſt, to the* 25*th of October*, 1774. By the ſame.—XVII. *Occultation of the double Star* γ *of Virgo;—Conjunction of Saturn with the Moon, the ſame Day, and the Place of a Star of the ſeventh Magnitude, which muſt have been eclipſed the ſame Evening by the Moon.* By the ſame.—*Continuation of the Memoir, printed in* 1774, *concerning the greateſt Digreſſions of Mercury from the Sun, and chiefly towards the Perihelium.* By M. Le Monnier.—XVIII. *On the Diſappearance of Saturn's Ring.* By M. Le Gentil.

This Volume is terminated by a very curious Memoir, ſent to the Academy, by the Royal Society of Montpellier, compoſed by M. Pouget. It treats of the *atteriſſimens* or acceſſions of land, that the coaſts of Languedoc have been long and gradually gaining from the ſea. Theſe proceed from the great quantities of ſand, gravel, and flints, that are carried down the Rhone, which meeting with the rapid current of the Mediter-

ranean at the mouth of that river, are ſtopped in their paſſage to the ſea, and thrown upon the coaſts. The details in this Memoir are curious and inſtructive.

ART. II.

Hiſtoire de l'Academie Royale des Sciences, &c. i. e. The Hiſtory and Memoirs of the Royal Academy of Sciences at Paris, for the Year 1776. 4to. 1779.

GENERAL PHYSICS.

MEMOIR I. *Concerning the extraordinary Cold felt at Paris, and in all the Provinces of France, alſo in other parts of Europe, in the beginning of* 1776. By M. MESSIER. This Memoir extends to 156 pages. The detail with which the laborious Academician relates his obſervations and deſcribes the inſtruments he uſed in making them, is moſt ample and circumſtantial. He employed eight thermometers, two with mercury, and ſix with ſpirit of wine, in order to obſerve the local differences of the cold in places ſhut up or expoſed to the open air, in different expoſitions and at different heights; and by reducing the dimenſions of theſe inſtruments to a common meaſure, he has furniſhed future obſervers with the means of knowing theſe thermometers again, and reconſtructing them in time to come, that the degree of cold obſerved this year (1776) may not be loſt, as that was which M. de la Hire obſerved in 1709.

M. MESSIER compares with his obſervations thoſe that were made in different places at Paris by order of the Academy.—This compariſon, which is attended with difficulty, on account of the difference of the times in which the cold riſes to its higheſt term in different places, is followed by a table of the obſervations of cold made throughout Europe. From this ample table it appears, that the winter of 1776 was not accompanied with an uncommon degree of cold in the northern parts of Europe; and that, even in Sweden and at Copenhagen, the cold was much leſs intenſe than at Paris. It is to be hoped, that the daily improvements of meteorological inſtruments, and the increaſing number of obſervers will give us, at length, ſome information with reſpect to the cauſes, hitherto unknown, of thoſe variations in the winters that are quite independent on the latitudes of the countries where they are obſervable.——Nor does our Academician omit the particular mention of the intenſely cold winters that are ſpoken of by hiſtorical writers. Until the year 1709, they were only known by the vague obſervation of ſome of their effects: the winter of that year was obſerved with a thermometer; but the method or art of rendering theſe inſtruments ſuſceptible of compariſon was then unknown; and unleſs we had the inſtrument that was employed in the obſervations of 1709, or which had been, at leaſt, compared with the thermometer with which theſe obſervations were made, it muſt be difficult to aſcer-

tain the temperature of that year. It is much to be queſtioned whether there exiſts an inſtrument attended with theſe advantages. Our Academician fixes the cold of that year at about 15 degrees.

His obſervations on the extraordinary cold felt in *Paris* and *Senones*, a town ſituated in a deep vale ſurrounded by mountains, are curious. They ſhew, in a very palpable manner, what a very great difference in temperature local cauſes may produce in different places, whoſe longitude and latitude are nearly the ſame. Still more curious are his experiments on the effect of the direct action of the ſun upon the thermometers, at different heights and in different temperatures obſerved in the ſhade.

ANATOMY.

Mem. I. *Concerning the reſpective Situation of the large Veſſels of the Heart and Lungs.* By M. SABATIER. However unſucceſsful all attempts towards an exact calculation of the animal motions have hitherto proved, it is nevertheleſs certain, that theſe motions are conformable to the laws of mechanics. Thus, for example, the diſtribution of the veſſels, which convey the blood to the different parts of the body, muſt be ſuch, that the frequent adheſions of theſe veſſels to each other may not occaſion a preſſion that would be detrimental to the circulation of that fluid :— that if the blood veſſels envelope the *trachea arteria*, or *bronchia*, they may not, by contracting them, obſtruct reſpiration ; and ſtill farther, that if two veſſels carry the blood into the ſame cavity, theſe two currents may not be impediments to each other. It is in this point of view that M. SABATIER examines the different veſſels of the lungs and the heart. There are no anaſtomoſes viſible in the great veſſels of the human body, particularly in thoſe that lie near the heart and the lungs; but the want of theſe is ſupplied by the reſpective ſituations of theſe veſſels, which anatomical authors have not (ſays our Academician) hitherto deſcribed with accuracy. He endeavours to do better.— He begins by deſcribing the ſituations of the *venæ cavæ*, of the pulmonary artery, and veins ; of the aörta, the laſt of the large veſſels of the heart in the order of circulation. He proceeds from thence to make ſome remarks on the poſition of the trachea or wind pipe, and on that of the bronchia, which, though they contain no liquid, muſt be counted among the pulmonary veſſels.

Our Academician obſerves, with reſpect to the two veins (*venæ cavæ*) which carry the blood into the right auricle of the heart, that though the one runs upwards, and the other downwards, yet they do not convey the blood in two contrary directions : He obſerves, that they have an inclination, which changes theſe directions, and makes them form an angle : that the blood of the *vena cava aſcendens*, is naturally directed towards the membrane which ſtops the *foramen ovale*, ſo that the blood paſſes

paſſes through this aperture in the fœtus, and that, after having met with this membrane in adults, it paſſes into the right auricle, where it unites with the blood of the *cava deſcendens*, whoſe motion, by this wiſe arrangement, it cannot impede. The great curvature, or arch of the aörta, comprehends, in its concavity, the right pulmonary artery, the trachea, the œſophagus, and the left bronchia; but the action of the blood upon this arch of the aörta is only adapted to ſtretch it out, ſo that no preſſion can reſult from thence upon the organs which it ſurrounds. The ſame diſpoſition ſecures the lateral parts or branches of the trachea, after their junction with the lungs, againſt the compreſſion of the pulmonary veins.

M. SABATIER obſerves farther, that the curvature of the aörta produces in the ſpine, or back-bone, of many perſons, a ſimilar curvature, whoſe concavity is conſequently towards the left; this curvature is ſometimes nor very diſcernible, and at other times it does not exiſt. This is owing to the correſpondent curvature of the aörta, which produces this effect either by its preſſion, or by its preventing the equal growth of the ſpine. This phenomenon explains what our Academician has obſerved in perſons that are troubled with the rickets; namely, that the curvature of the ſpine extends its convexity towards the right. In examining the ſhape of moſt men, an attentive eye will ſeldom fail to diſcover a ſmall difference between the two ſides of the body, which is very well accounted for by the obſervation already mentioned: This difference is the moſt palpable in men, and eſpecially in women, whoſe profeſſions require hard labour. It may be explained by the general cuſtom of performing with the ſame hand all thoſe kinds of labour in which the employment of both hands is not neceſſary. It might not be unworthy of the attention of anatomiſts to obſerve the direction of the curvature of the ſpine in perſons who have a natural propenſity to employ the left hand rather than the right.

Mem. II. *Anatomical Obſervations.* By M. VICQ. D'AZYR. This Memoir contains two obſervations: One on a ſubſtance of an oval form, and full of hairs, found in the uterus or womb of an unmarried woman of ſixty-five, and the other on a ſingular diſpoſition of the veſſels of the meſentery. Theſe Obſervations are both curious: the latter is particularly worthy of attention. Our Academician diſſected a body in which the greateſt anaſtomoſis, which joins the two meſenteric arteries, was abſolutely wanting. This obſervation, with others that have been made on different part of the human ſtructure, ſhew, that there is more or leſs latitude in the laws of Nature even in the formation of individuals of the ſame ſpecies, who may live and exerciſe the ſame functions, with remarkable diverſities of organization in the parts that perform them. We recommend this obſervation

ſervation to the ſpoiled children of Spinoſa; and to the votaries of a blind and uniform neceſſity.

Mem. III. *A Deſcription of a Monſtrous Child, with One Head and Two Faces, and Two Bodies joined in their upper Parts, the one regular and complete in its conformation, the other imperfect.* By M BORDENAUE. A woman belonging to the village of Brunoy, aged thirty-three years, after a labour of three days, was naturally delivered, the 23d of June 1775, of the Foetus, which is the ſubject of this Memoir. The Foetus was preſented to the Academy of Sciences, and is repreſented at the end of the Memoir by four figures, that give a clear idea of the ſituation of its parts. The woman's delivery was long, though not laborious; for Nature had done the work before the arrival of the ſurgeon. The navel-ſtring, being weak, was broken during the delivery, and the child died through loſs of blood and want of ſuccour. On this the ſurgeon, turning all his attention to the aſſiſtance of the mother, was ſurpriſed to find a ſecond child, which was male, well formed, and lived three days after its birth.

The inſpection of the other Foetus, which was manifeſtly a junction of two bodies, perſuaded our Academician, that there was no anomalous production in the caſe, and that the one of the two, which was a rude maſs, the face excepted, and which adhered to the thorax of the other, ſo as to make one ſubſtance with it, was no more than the remains of a Foetus that had not arrived at its full delopement and formation. This defect he neither attributes to the force of imagination, nor to any thing originally monſtrous or anomalous in the *ovum*, but thinks it aroſe from ſome caſual preſſion, or ſome of the various accidents to which two germs or principles of the Foetus are expoſed in the time of conception. He ſuppoſes, that three ova or germs were impregnated, two of which, by ſome accidental preſſion, contracted an unnatural union, which obſtructed the progreſs of their organization, and occaſioned the monſtrous object here conſidered; and he obſerves, that theſe apparent diſorders are no objections to the uniform proceedings of Nature, but are merely the effect of foreign cauſes, which diſconcert her operations in the period of conception.

CHEMISTRY.

Mem. I. *Reſearches concerning the Methods which are uſed by the Aſſayers to fix the Standard of Gold in mixed Subſtances, and to determine at the ſame time the Quantity of Silver they may contain, as alſo concerning the Means that may be employed to improve this double Operation.* By M. TILLET. In ſeveral Memoirs preſented to the Academy (in the years 1760, 1762, 3, and 9,) this laborious chemiſt had laid down a method of ſeparating perfect from imperfect metals; and here, to finiſh his plan, he points out the method

method of ſeparating perfect metals from each other. We refer the chemical reader, and the officers of the Mint, to the Memoir itſelf for a circumſtantial account of M. TILLET's method of proceeding, which is plain, but too long in the manipulation part of it for inſertion here. The utility ariſing from this proceſs is not its only merit: it preſents, moreover, to the natural philoſopher, the ſingular phenomenon of ſubſtances, which, after having been ſubjected to the action of fire and chemical agents, mixed with other ſubſtances and combined with acids, may be reſtored to their primitive ſtate without any loſs. M. TILLET has ſubjoined to this Memoir a deſcription of the furnaces he employed, and an account of his methods of regulating, or augmenting, the activity of the fire.

Mem. II. *An Inquiry into the Combination of concrete Acid of Tartar with Zinc.* By M. DE LASSONE. The principal conſequence ariſing from the experiments made by this Academician are: 1. That the reciprocal action of metallized zinc, its calx, and the concrete acid of tartar, are fully aſcertained. 2. That the zinc is entirely ſoluble by the tartareous acid; but that, in order to obtain this ſaline combination complete, there muſt be at leaſt ſeven or eight parts of tartar to one of zinc. 3. That the tartar, diſſolved in boiling water, diſſolves the zinc as much by its oily *latus* as by that of the acid. 4. That the combination, in this ſaline mixt, on account of this double affinity, appears entire and not eaſily to be deſtroyed, as the agents that are the moſt proper to deſtroy it (ſuch as fixed and volatile alkalies) produce ſcarcely any effect of that kind. Our Author concludes his Memoir with a kind of advertiſement that deſerves notice:—"After the ſmall number of experiments (ſays he) that I have tried with this ſaline mixt (i. e. the combination of the concrete acid of tartar with zinc), applied, as an external remedy in certain diſorders of the eyes, I have found it ſuperior in efficacy to the tutty, or the ſimple flowers of zinc, as they are generally uſed.

Mem. III. *Concerning the exiſtence of the Nitrous Acid, and the Methods of decompounding and recompounding that Acid.* By M. LAVOISIER. The greateſt part of the experiments mentioned in this Memoir (we believe the *whole*), were formerly made by Dr. Prieſtley; but the ſame *facts* have led theſe two eminent philoſophers to *concluſions* not only different, but oppoſite. Among ſeveral of the Doctor's concluſions, which this Academician thinks inadmiſſible, there is one that he takes particular notice of, as he imagines it may be of dangerous conſequence. The celebrated Engliſh philoſopher having obſerved, that, from a combination of the nitrous acid with any kind of earth, he always obtained common air, or air of a ſuperior kind, thought himſelf authoriſed to conclude, from this experiment often repeated,

peated, that the air of the atmoſphere is a compound of earth and the nitrous acid. But M. LAVOISIER concludes from *his* experiments, and a careful analyſis of thoſe made by Dr. Prieſtley, that it is not air which is compoſed of the nitrous acid, but the nitrous acid which is compoſed of air; and he thinks that this obſervation furniſhes the true explication of the experiments related in the 3d, 4th, and 5th ſections of Dr Prieſtley's ſecond volume.

Mem. IV. *An Account of a ſeries of Experiments which ſhew the Nature and Properties of ſeveral kinds of Air, or* Aeriform * *Emanations, extracted by different Methods from a conſiderable Number of Subſtances.* By M. DE LASSONNE. This Memoir contains thirty-one experiments, which aſcertain the exiſtence of an *inflammable air*, quite diſtinct from that which is commonly ſo called. It is obtained by a diſtillation of Pruſſian blue, or of the calx of zinc mixed with powder of coal. It is inflamed without detonation or the leaſt exploſion, and it yields a blue flame of the greateſt beauty. It is not yet time to attempt the explication of this phenomenon; but the Reader will find in this Memoir an intereſting detail of facts, whoſe reſults will lead to ſeveral new methods of obtaining various aerial, inflammable emanations; alſo fixed air, and dephlogiſticated air.

Third Memoir concerning Verdigriſe. By M. MONTET. This Memoir was ſent by the Royal Society of Montpellier to the Academy, with which it forms one body, as appears by the Royal Edict of 1706. It contains new improvements of the method of making verdigriſe, which were ſuggeſted by an accidental circumſtance, that happened at *Saint Andre*, a village about ſix leagues from Montpellier. A woman who was employed in making verdigriſe, giving to her aſs ſkins of preſſed grapes to eat, let ſome of them fall, through inattention, on plates of copper, which were covered with them, and lay for ſome time forgotten. After ſeveral days the woman went to gather up theſe ſkins, and found the plates covered with a layer of verdigriſe. Thus the leavings of the wine-preſs became an ingredient in the manufactory of this ſubſtance, and M. MONTET ſhows how they muſt be employed for this purpoſe.

ASTRONOMY.

Mem. I. *Concerning the Spots of the Sun, and the rotation of that Body.* By M. DE LA LANDE. This able aſtronomer relates here the obſervations of the ſpots of the ſun, made by Galileo and Fabricius; the concluſions they drew from theſe obſervations to determine and aſcertain the motion of rotation of that

* We adopt this term, as it expreſſes happily the reſemblance which certain fluids (whoſe nature is yet but very imperfectly known) bear to air.

luminous

luminous body, and the methods they propoſed to render this determination more eaſy and certain. He afterwards propoſes *his* method, which he thinks preferable on account of its facility and ſimplicity.—He then gives us a new hypotheſis, relative to the production of ſpots in the ſun. He ſuppoſes that this great ſource of light is a kind of ſolid *nucleus*, covered with a fluid in fuſion: this being the caſe, the points of the eminences of the nucleus are ſometimes covered with this fluid, and ſometimes uncovered, and leſs luminous than the matter in fuſion; ſo that they in this latter caſe exhibit the appearance of obſcure ſpots on the ſun. This hypotheſis is not entirely new; its principal idea is the ſame with that of M. *De la Hire*, who conſidered the ſpots in queſtion as the eminences of a ſolid and permanent body, floating in the fluid maſs of which the ſun is formed. Conjecture for conjecture; that of Mr. *Wilſon* is the moſt ingenious of the three; but as it is well known to our aſtronomical Readers, we need not mention it. M. De la Lande terminates this Memoir by the examination of an effect of the ſolar rotation, which has not hitherto been conſidered by philoſophers, but may one day (though it be not likely that we ſhall ſee it) become a remarkable phenomenon in coſmology: this *ſuppoſed* effect is a motion of tranſlation, by which the ſun changes more or leſs his place. But this local change is merely hypothetical; it may be aſcertained in ſome future period, by obſervations of the fixed ſtars. At preſent, it is only a mathematical opinion, founded on this ſuppoſition, that the motion of rotation being communicated to the ſun by one ſingle impulſion, muſt have affected its centre of gravity, and produced in it a progreſſive motion. All this *may* have been, and *may not* have been. If the impulſion was directed to more than one point, the centre of gravity might have remained unaffected, while the motion of rotation was produced. And who can be ſure that this was not the caſe?

Mem. II. *Concerning the Amplitude of the Sun at Setting, obſerved at St Sulpice.* By M. Le Monnier.—*Obſervations of the total Eclipſe of the Moon, the 30th of July*, 1776.—Theſe Obſervations are contained in ſeveral Memoirs, and were made ſeparately at *Paris*, by Meſſrs. De Fouchy, Le Monnier, Caſſini de Thury, Pingré, Bailli, Jeaurat, Meſſier,—and *Perinaldo*, in the county of Nice, by M. Maraldi.

Obſervations on Eclipſes of the Satellites of Jupiter, made in the Year 1776, *at Perinaldo, in the County of Nice, with an Acromatic Teleſcope of three Feet.* By M. Maraldi.—*Obſervation* on a dark Band, which appears on the Globe of Saturn. By M. Messier.—Memoir, *relative to the eleventh Comet, obſerved at Paris, from the Obſervatory of the Marine*, from the 14th of June, to the 3d of October, 1770. By the ſame.

Memoir

Memoir concerning a new Conſtellation. By M. Le Monnier. This Aſtronomer obſerved, under the ſcales of libra, a void, which nobody hitherto thought of filling up. This void nevertheleſs contains ſtars often eclipſed by the moon, and which may conſequently be of uſe, both in determining the longitudes, and in verifying the theory of the moon. Our Academician has determined the poſition of twenty-two of theſe ſtars, and has joined them in a conſtellation, which he calls the *ſolitary*, after a bird of the Indian ſeas, mentioned by M. Pingré, in the account of his voyage to the Iſle of Rodrigues.

Continuation of the Twelfth Memoir of M. Dionis du Sejour, entitled, *New Analytical Methods of calculating the Eclipſes of the Sun, the Occultations of the fixed Stars and Planets by the Moon, &c.* We have here only the 7th, 8th, and 9th Articles of this Memoir, which fill 103 pages. The reſt are reſerved for the ſucceeding volume.

Geography.

New Conſiderations deſigned to prove, that Cape Circumciſion *really exiſts in 54 Degrees of Southern Latitude, and that its geographical Longitude has been hitherto fixed at about 7 Degrees more than it is.* By M. Le Monnier. On the 1ſt of January, 1739, M. *Bouvet*, an eminent French navigator, diſcovered land, the ſituation of which he fixed at 54 deg. of Southern latitude, and 28 deg. $\frac{1}{2}$ of longitude, and which he called the *Cape of the Circumciſion.* Our immortal navigator Captain *Cook*, among his various reſearches, endeavoured to meet with this Cape, but could not find it. This, no doubt, was enough to form a preſumption againſt its exiſtence; M. Le Monnier, therefore, endeavours to remove this preſumption. He imagines, that M. *Bouvet* was miſtaken in the longitude of the place in queſtion, as the methods of finding the longitudes in his time were not exact. This being premiſed, he examines the declination of the needle obſerved at Cape Circumciſion, by M. *Bouvet*, and comparing ſeveral obſervations of this kind, he inquires into the change of declination that has taken place ſince his time in thoſe parts of the world. The reſult of his inquiry is, that at the time of Captain Cook's voyage, the declination of the needle at Cape Circumciſion muſt have been 10 degrees towards the Weſt; that the place where Captain Cook ſought this Cape had a declination of 13 deg. $\frac{1}{2}$, and that this difference of 3 deg. $\frac{1}{2}$ anſwers to 7 deg. of longitude. It is not therefore ſurpriſing, according to M. Le Monnier's account, that the Britiſh navigator did not find this Cape, ſince it is at 21 deg. $\frac{1}{2}$ of longitude to the Eaſt of the Iſle of Ferro, and not at 28 degrees, that it muſt be ſought.

[But with all due ſubmiſſion to the opinion of ſo learned a man as M. Le Monnier, we cannot help obſerving, that he ſeems to have laid more ſtreſs on this argument than it can poſſibly bear: for,

{All within the Brackets was written by Mr. Wales —}

for, to ſay nothing concerning the uncertainty of M. Bouvet's inſtruments and obſervations, neither of which, we apprehend, could be better depended on, than thoſe of Captain Cook, and his aſſociates; we find that thoſe of the latter were not capable of determining the variation to ſo ſmall a quantity, as that which is ſo ſtrenuouſly inſiſted on by M. Le Monnier, and conſequently all arguments which are founded on a contrary ſuppoſition muſt fall to the ground. For on conſulting thoſe obſervations, we ſhall find, that barely putting the ſhip round, would make a difference of near 6 degrees in the variation by the ſame compaſs*; and, ſometimes near 10 degrees†. That the ſame compaſs, in the ſame ſituation in every reſpect, but at two different times of the ſame day, would give variations differing from one another 4 and 5 degrees‡. That the ſame compaſs, on the ſame day, and in the hands of the ſame obſerver, will give 5 degrees difference in the variation on board the ſame ſhip when under ſail, and when at anchor in a roadſtead§. Again, compaſſes made by the ſame artiſt, on board different ſhips; but at the ſame time of the day, differed 3°, 4°, and upwards in the variation‖. But, as a caſe more directly in point to the argument before us, we may obſerve that on February 10th, 1774, in the latitude of 53° $\frac{1}{8}$ S. and longitude 263° E. when Captain Cook was returning northwards from the latitude of 71° $\frac{1}{4}$ S. Mr. Wales found the variation to be 15° 7′, and Mr. Clerke found it to be 15° 32′ Eaſt¶. But in croſſing the Pacific Ocean from New Zealand to Cape Horn, on the 11th of December afterwards, Mr. Wales, by the ſame two compaſſes, on board the ſame ſhip, and within a few miles of the ſame place, had 9° 55′ and 11° 31′**. Theſe differences, ſeveral of which happened very near the place in queſtion, are all of them at leaſt equal to, moſt of them greater, and ſome of them almoſt double the difference of variation on which M. Le Monnier founds his argument; and therefore, in our opinion, render it totally invalid. To allege that the inſtruments which were uſed for this purpoſe, in Captain Cook's voyage,

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* See "The original obſervations, made in the courſe of a voyage towards the South Pole, and round the world" by W. Wales, F. R. S. and W. Bayley, p. 372, March 11th, 1773.

† Ibid. p. 375. January 24th, 1774.

‡ Ibid. p. 371. February 2d, 1773. and p. 382. January 19th, 1775.

§ Ibid. p. 385. July 14th, 1775.

‖ Ibid p. 181, and 369. Aug. 3d, 9th, and Sept. 4th. 1772. Alſo p. 182, and 371. January 11th, and 14th, and February 7th, 1773.

¶ See the ſame Obſervations, p. 375.

** Ibid. p. 381.

were

were bad, or that the obſervers were not expert, will anſwer no purpoſe. They were the inſtruments and obſervers which M. Le Monnier's argument muſt reſt on; and therefore let thoſe of the French navigator have been ever ſo much better, which few will be hardy enough to aſſert, it will avail nothing to the point in diſpute. Indeed it appears very extraordinary to us, how M. Le Monnier could ſuppoſe, that it was eaſier to commit an error of 7 or 8 degrees in the longitude, in ſo ſhort a run, without diſcovering it, on making land afterwards *, than to miſtake $3\frac{1}{2}^{\circ}$ in obſerving the variation of the compaſs.

To theſe arguments it may be added, that although the Reſolution was too much to the ſouthward of the parallel of 54° when ſhe croſſed the Meridian of $3\frac{1}{2}^{\circ}$ Eaſt of Greenwich, the longitude which M. Le Monnier has been pleaſed to aſſign for Cape Circumciſion, to ſee it; yet her conſort, the Adventure, was for ſeveral degrees on each ſide of that meridian, full as near to the parallel of 54° S. as M. Bouvet was to the land when he firſt ſaw it. And on this day that the ſhip was exactly in that longitude, they had fine clear weather *. On the whole, we have no doubt but that M, Le Monnier's paper has been a haſty publication; and that when he has conſidered the matter fully, he will find reaſon to alter his opinion. †

MECHANICS.

CONTINUATION *of the Inquiries concerning ſeveral Points in the mundane Syſtem.* By M. DE LA PLACE. Memoirs II. and III. In theſe two Memoirs, and the one mentioned in a preceding article, the Author propoſes to determine the oſcillations of a fluid, which covers a ſpheroid. The mechanical principles that are neceſſary in order to find the equations of this problem, are known to the mathematicians, and M. De la Place makes ample and candid mention of the aſſiſtance he has received from the learned reſearches of the geometricians of the preſent century in the ſolution of theſe equations, with reſpect to ſeveral of the hypotheſes that are conſidered in this Memoir.

The learned Academician conſiders this problem, with reſpect to the ebbing and flowing of the ſea, the preceſſion of the equinoxes, and the variations of the atmoſphere, cauſed by the attraction of the heavenly bodies. The phenomenon of the ebbing and flowing of the ſea, of which Sir Iſaac Newton diſcovered the true cauſe (and concerning which we have the excellent treatiſes of Mr. Maclaurin, and Meſſrs. D. Bernoulli and Euler, publiſhed in 1740) has drawn the peculiar attention of

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* See the Account of M. Bouvet's Voyage, extracted from the archives of the French Eaſt India Company, by M. D'Apres, and publiſhed by Mr. Dalrymple, F. R. S.

† See Obſervations, p. 218.

many able mathematicians, during theſe laſt forty years. But our Academician is the firſt, known to us, who has conſidered this phenomenon in all its extent, and with a view to all the cauſes and incidents that are capable of affecting or altering it. He has carried ſtill further than his predeceſſors his inquiries into the influence of theſe different cauſes, in order to be thus qualified for comparing the reſults of his theory, with the notices that have been furniſhed by obſervation. He explains, by his theory, not only the phenomena which have been already explained, but likewiſe that of the almoſt entire equality of the tides of the ſame day: it follows from this theory, that the difference between theſe two tides is in exact proportion to their force, and this is a fact aſcertained by obſervation.

The depth of the water of the ſea enters into this eſtimate: in order to correſpond with obſervations and phenomena, this depth muſt be nearly uniform, and muſt be, at leaſt, four leagues, according to our Academician. The diſcuſſions relative to this object, are curious, intereſting, and have in ſeveral places the merit of novelty. Equally curious are his obſervations on the denſity of the air, on the motion produced in the atmoſphere by the attraction of the moon and the ſun, which, according to the reſult of his analyſis, muſt be imperceptible and inſufficient to account for the permanent winds. In ſhort, there is a rich and diverſified treaſure of phyſical knowledge in theſe Memoirs, in which are ſeveral inſtructive digreſſions relative to the equilibrium of ſpheroids, the law of powers at their ſurface, the figure of the earth, and the motion of the waves.

Art. III.

Memoire Phyſique et Medicinale montrant des Raports evidens entre les Phenomenes de la Baguette Divinatoire, &c. i. e. A Philoſophical and Medical Repreſentation of the Marks of Reſemblance that are obſervable in the Phenomena of the *Virgula Divina*, of Magnetiſm and Electricity, together with Illuſtrations on other Matters of no leſs Moment, that are relative to this Subject. By M. T... (Thouvenel.) 12mo. Paris. 1781.

THE *virgula divina*, otherwiſe called *baculus divinatorius*, is (as moſt people know) a forked branch in form of a Y, by the aſſiſtance of which, many have pretended to diſcover mines and ſprings under ground. This ſingular phenomenon (like an object of a much higher, and more ſacred nature) has given occaſion to the irrational extremes of enthuſiaſm and incredulity. Certain it is, that the philoſopher has his prejudices as well as the fanatic: he is often tempted by vanity, to deny what he cannot explain; and not ſeldom rejects, as impoſſible, facts, which he is ſurprized afterwards to ſee confirmed by ex-

perience. Nevertheleſs, we have here a philoſopher, well known, and much eſteemed in the learned world, who, by ſix hundred experiments, made with all poſſible attention and circumſpection, aſcertains the facts attributed to the *virgula divina*, or divining rod, and undertakes to unfold their reſemblance to the admirable and uniform phenomena of *electricity* and *magnetiſm*.

The *firſt ſection* of his Diſſertation is deſigned to ſhew, that the *facts* are by no means impoſſible. If no philoſopher can deny that certain emanations proceed from the earth, it cannot be denied that theſe emanations *may be* moſt abundant in thoſe places, where the earth's ſurface covers running or ſtagnant waters. Again; it cannot be pronounced *impoſſible*, that theſe emanations ſhould act powerfully on certain individuals, while they make little or no impreſſion on the generality. The ſenſitive powers vary greatly, not only in different claſſes of animals, but even among thoſe of the ſame ſpecies. So far there is no impoſſibility in the caſe.—But granting, that emanations from ſubterraneous waters may powerfully affect certain perſons, what connexion is there between this impreſſion, and the motion or rotation of the hazel rod which is held in the perſon's hand, or laid over his fingers? This is a difficulty that deſerved our Author's eſpecial attention; though, after all, if the *facts* be aſcertained, this difficulty only proves our ignorance. Nevertheleſs, M. THOUVENEL attempts the removal of it by a theory, which accounts tolerably well for this ſingular phenomenon. He thinks, that the evaporations of ſubterraneous waters have a courſe or current, perfectly ſimilar to that of a fluid,—that they penetrate thoſe bodies that are capable of receiving them,—that there are points of direction towards which they tend with a peculiar abundance, as happens in electrical experiments; and that, if theſe emanations direct their principal courſe to the extremities of the body, or to the hand, it is not abſolutely impoſſible to conceive that they ſhould communicate a motion of rotation to the *divining rod*.—Our Author, indeed, obſerves, that in the hands of *Bléton*, of whom we ſhall preſently ſee the very ſingular caſe, the rod is only a ſecondary and ſubordinate guide: for this man has an *internal feeling*, and an *external motion* which give the moſt certain notices of the preſence of water; and he only makes uſe of the rod to ſhew it to others.—But let us proceed to *facts*.

Theſe we find in the *ſecond ſection* of this Diſſertation or Memoir, where the Author gives an ample account of his experiments, the trials to which he put *Bléton*, and the reſult of his inquiries on this ſingular ſubject. He relates firſt the general facts; afterwards the more particular ones which are adapted to lead to an explication of them, and points out their ſimila-

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rity to the known phenomena of electricity and magnetiſm:—— We ſhall take ſome ſteps with him in this walk, though we cannot help looking at him, now and then with a ſuſpicious eye.

Whenever *Bléton* is in a place where there are ſubteranneous waters, he immediately feels a lively impreſſion on the diaphragm, which he calls his *commotion*. This impreſſion produces an oppreſſion in the anterior and ſuperior part of his breaſt; at the ſame time he feels a ſhock, a general tremor, and chillneſs; his legs ſtagger, the tendons of his wriſts become ſtiff, and grow convulſive; the pulſe is concentrated, and gradually diminiſhes. All theſe ſymptoms are more or leſs ſtrong, according to the volume and depth of the water; and they are more ſenſibly felt, when Bléton goes againſt the ſubterraneous current, than when he follows its direction. When theſe emotions are violent, he is obliged to reſt himſelf from time to time, and if he continues too long in this kind of exerciſe, his body is weakened, he droops the whole day, feels a laſſitude, and complains of a headach, accidents which generally follow ſtrong nervous emotions.—When he is placed not over the ſubterraneous current, but at the ſide of it, all theſe ſymptoms ceaſe almoſt ſuddenly; and there only remains an inward chillineſs, attended with a ſmall oppreſſion in the forepart of the breaſt: at a certain diſtance from the water, he is abſolutely delivered from all theſe ſenſations and emotions.

A very ſingular circumſtance attending the caſe of this man is, that ſubterraneous waters, which are ſtagnant, produce no effect or impreſſion upon him; nor is he affected by waters which are expoſed to view, as thoſe of rivers, lakes, &c. with this exception only, that when he has been in a boat, he complains, after ſome time, of a head-ach, and a wearineſs through his whole body.—There is no remarkable viſible difference between the phyſical conſtitution of this man, and that of others, if we except this, that he is more ſenſibly affected by change of weather, and variations in the ſtate of the atmoſphere, than other men. With reſpect to the peculiar impreſſions that diſtinguiſh him from others, they are diverſified in their degree by certain circumſtances. A greater or ſmaller quantity of electricity in the air renders them more or leſs lively. Dry and warm weather is the moſt favourable to his operations. His ſenſations in his water experiments are much ſtronger before than after meals. A ſevere acute diſorder had abſolutely deprived him of the faculty of perceiving water, and his ſenſibility in this reſpect did not return, until three months after his recovery.

However ſurprizing the impreſſion may be, which the proximity of ſubterraneous waters makes upon *Bléton*, the phenomena of his *divining rod* are ſtill more wonderful. It is to be

obſerved, that this ſingular man differs from his *brethren* of the profeſſion, both in the uſe and choice of his rod; he does not graſp it cloſely; he does not warm it in his hands; he does not preſer a young *hazel* branch forked, newly plucked and full of ſap. He places horizontally, on his forefinger and thumb, a rod of any kind of wood (except elder), freſh or dry, not forked, but only a little curved or bent. If the rod be ſtraight, it does not turn upon its axis in the experiment, but only riſes ſomewhat towards its extremities by little ſprings: but if it is bent ever ſo little, it turns on its axis with more or leſs rapidity, according to the quantity of the water, and the force of its current. Our Author counted from thirty-five to eighty revolutions in a minute, and always perceived an exact proportion between the rotation of the rod, and the convulſive motions of Bléton.

This latter circumſtance, at firſt ſight, rendered our Author diffident; and it may make the Reader ſuſpect, that Bléton had at command, both his own convulſions, and the motion of the rod. But M. *Thouvenel*'s care in examining this matter, ſeems to remove all ſuſpicion of this kind. He placed himſelf, and ſeveral other perſons, ſucceſſively above the water ſpring, with the rod placed, as Bléton placed it. The rod remained motionleſs, until *Bléton* approached the perſon that held it, and *then* it made upon the fingers of that perſon, the ſame rotations that it had made on Bléton's. M. T. nevertheleſs remarks, that the rotations were more or leſs rapid and durable on ſtrange hands, in proportion to the different conſtitutions of thoſe on whom the experiment was tried.——The following circumſtances are alſo very ſingular:

The natural motion of the rod on *Bléton*'s fingers, is a backward motion; but as ſoon as he withdraws from the ſpring, in any line or direction whatever, the rod, which ceaſes to turn the very inſtant that he quits the ſpring, undergoes, at a determinate diſtance (which never varies), a motion of rotation in a direction contrary to its former one; but this new and forward motion does not go beyond one revolution. By meaſuring the diſtance between the point where this retrograde motion takes place, and that from which *Bléton* ſet out in withdrawing from the ſpring, the depth of the ſpring is generally found.

Theſe facts are ſo extraordinary, that, notwithſtanding the extenſive knowledge of M. THOUVENEL, and his known probity and diſintereſtedneſs, they will naturally meet with unbelievers, among thoſe who are not acquainted with the character and abilities of this intelligent and careful obſerver. He himſelf ſeems to be well aware of this; and accordingly he tells us, to remove all ſuſpicion of impoſture, miſtake, or deluſion, that theſe experiments have been repeated, in the ſpace of

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two months, in the preſence of above an hundred and fifty perſons; and that among others, M. *Jadelſt*, profeſſor of phyſic at Nancy, a man eminent for his genius and abilities, was not only a witneſs of theſe experiments, but was actually concerned in the greateſt part of them.—Each of theſe experiments was repeated at different times, in different manners, and with all the precautions that could prevent fraud, through the ingenious application of mechanical contrivances, to produce the appearances under conſideration. We ſhall give a part of theſe precautions in a tranſlation of the Author's own words:

'I repeated, *ſays he*, theſe experiments, ſometimes blindfolding Bléton, and ſometimes binding his arms behind his back, allowing him only ſuch a uſe of his hands, as was barely neceſſary to his holding the rod. I brought him to places which he had never ſeen. I conducted him blind-fold, at one time, towards ſprings which I knew, and which he could not have known before; at another, to grounds, whoſe ſubterraneous contents were unknown to us both.—I brought him back again by different roads, and ſtill blindfold, to the ſame places.—I made him go backwards; and notwithſtanding all theſe attempts to diſconcert him, he ſtill returned to the courſe of the ſtream, conducted me, himſelf ſtill blindfold, and only ſupported by one arm, to the place from whence he ſet out, without deviating in the leaſt from the lines that had been drawn to mark the current, and following exactly the ſame windings of the water that he had formerly indicated. Sometimes I removed the marks he had himſelf made to indicate the courſe of the water, and ſubſtituted falſe ones in their place, endeavouring thus to deceive him by his ſenſes, but he always obſerved and rectified the error, and of ſix hundred trials I made to deceive him, not one ſucceeded.'

Our Author's curioſity did not end here: he opened a new field of inveſtigation, hitherto unattempted, and made experiments upon the phenomena of the *virgula divina*, or divining rod, which muſt render them ſingularly intereſting to natural philoſophers. He made experiments upon *Bléton* with *magnetic* compoſitions, newly electrified, and found they produced no viſible influence on him, more than on other men, when he was at a diſtance from a ſpring; but when he was placed above a ſpring, and magnetic compoſitions were preſented to his touch, our Author obſerved a diminution of three-fourths, both in the convulſive motion of his body, and the rotatory movement of the rod. This led him to think, that with *ſtronger doſes* of this kind of *electrics*, and a deeper impregnation, both theſe movements might be entirely ſuſpended. As ſoon as M. THOUVENEL withdrew his electrical preparations, the phenomena of the influence of the water upon Bléton reſumed all their force.

It was not on *Bléton* alone that theſe electrical trials were made. We have already ſeen, that the proximity or contact of this man was ſufficient to communicate to our Author, the virtue of making the rod turn about. M. T. therefore provided himſelf with magnetic compoſitions, electrified ſometimes in the form of balls, ſometimes in powder, in bags and caſes; and then the proximity or contact of *Bléton* could not communicate the ſmalleſt motion to the rod. This experiment appeared to be influenced by the ſtate of the atmoſphere, and to vary with the air, like every other kind of electricity.

Other facts are related in this Treatiſe, which ſhew ſtill more remarkably, the key that electricity may furniſh to explain the phenomena of the divining rod. The effects of *inſulators* or non-conductors, are generally known. Our Author, curious to know what effects they would produce on *Bléton*, placed ſucceſſively under his feet pieces of folded ſilk, and cerecloth, planks thickly covered with wax or roſin, and alſo glaſs inſulators. In theſe experiments, both the motion of the rod, and the impreſſion of the water were almoſt imperceptible; and they were totally ſuſpended by making *Bléton* touch artificial *electrics*. In other experiments, made with ladders raiſed perpendicularly above the ſprings, the impreſſions of the water upon the rod and the body of Bléton, manifeſted themſelves at the height of 15, 20, and 30 feet; whereas the impreſſion ceaſed, and was null with reſpect to both, when a piece of cerecloth was placed under theſe ladders.

Theſe facts, which we have ſelected from a conſiderable number of the like kind, ſeem to favour our Author's conjecture, that there are eſſential connexions and affinities between the phenomena of the divining rod, and thoſe of magnetiſm and electricity. Theſe experiments, followed by others, which inventive ſagacity muſt undoubtedly ſuggeſt, will perhaps, in proceſs of time, enable the natural philoſopher and the chemiſt to explain theſe curious phenomena, and to diſcover new affinities between the ſubterraneous, atmoſpherical and animal electricities. The internal ſtreams may be the natural conductors of the firſt, as the clouds in the air, and the blood-veſſels in animals, are of the ſecond and the third. One of the moſt eſſential objects of the farther experiments that may be made to illuſtrate the phenomena of the divining rod, ought to be, ſays our Author, to enquire whether theſe phenomena be owing to the acquiſition or deperdition of any ſubtile matter, which iſſues from the terreſtrial globe, or is extracted from the human body, or whether both theſe cauſes operate at the ſame time, to produce the effect under conſideration. For example,—the direct rotation of the rod, and the convulſive motion of the body, may perhaps be occaſioned by the former (*the acquiſition*), whereas the retrograde motion

motion of the rod, accompanied with an internal ſhivering, which announces the reſtoration of the equilibrium in the organs of the *diviner*, may be occaſioned by the latter (*the deperdition*), and then it may be inquired, whether the former be not a ſpecies of *poſitive*, and the latter a ſpecies of *negative*, electricity.

We paſs over ſeveral obſervations of our Author, relative to the important diſcoveries that may be made by ſuch inquiries, and to the advantages that medical practice may derive from them. We imagine that our Readers will be, at this moment, peculiarly anxious to ſee all the degrees of evidence, with which the relation of the facts hitherto mentioned is accompanied, and we are deſirous to ſatisfy them, on this head, as far as this can be done from the Author's declarations. He tells us, that he addreſſed circular advertiſements to all the perſons who employed Bléton, and to all the provinces where this man exerciſed his ſingular profeſſion, in order to obtain accurate and well-atteſted accounts of the ſucceſs of his undertakings. The reſult of this was a multitude of teſtimonies, which confirmed his own obſervations; and theſe are publiſhed at length in the third ſection of the Work now before us. He does not always mention the names of the perſons who have ſent him the memoirs and letters that atteſt *Bléton*'s talent and ſucceſs, but he points out always their place of reſidence, their employments, rank, and all the circumſtances that are adapted to make them known. He offers moreover to ſhew their letters and their ſeals, to ſuch as deſire it. Among thoſe who bear teſtimony in this caſe, we find a great number of perſons in diſtinguiſhed ſituations,—biſhops, magiſtrates, heads of colleges and communities, phyſicians, &c. It appears by theſe teſtimonies, that many towns, communities, and individuals, are indebted to Bléton for the ſprings with which they are enriched. Among the *Memoirs* that have been ſent to our Author, ſeveral are compoſed by perſons eminently ſkilled in chemiſtry and natural philoſophy, among whom he particularly mentions M. *Sigaud de la Fond.* This ingenious profeſſor, ſo well known, and ſo juſtly celebrated, has appeared publicly as an aſſertor and witneſs of *Bléton*'s atchievments; he even affirms, that he has ſeen operations of the divinatory rod, ſtill more wonderful than thoſe of *Bléton*.—If this extract had not already ſurpaſſed the bounds we propoſed to give it, we would copy M. *Sigaud*'s account of the effects of metals upon a divinatory rod, which, in the hands of a fair lady at Bourges, was indeed marvellous in its indications. *M. Sigaud* was an eye witneſs of theſe *marvels*, which are only *ſuch*, becauſe we are unacquainted with their mechanical cauſes. The attraction of the loadſtone is every whit as marvellous as the divinatory rod; and there is as much narrowneſs of mind in diſbelieving things, becauſe they ſurprize us,

and becauſe they have been the innocent occaſions of fraud and impoſture, as there is in the moſt implicit and ſuperſtitious credulity. The great point here is to examine facts and teſtimonies. The name of M. Sigaud is certainly of great weight in the relations of our Author: we are even highly diſpoſed to believe him, in what he himſelf relates of the lady of Bourges; though, to render the moral evidence complete here, we could wiſh to know ſomething of the moſt material qualities and accompliſhments of the lady in queſtion. For here a more than ordinary faſcination may be ſuſpected, againſt which philoſophers are not always proof;—being, at the beſt, men of like paſſions with ourſelves.

Our Author ſpeaks much of the medical uſes that may be derived from ſucceſsful inquiries into the mechanical cauſes of the phenomena we have been relating, and thinks the power of managing (or being managed by, one might as well ſay) the *divinatory rod*, might be communicated to many, who are not as yet initiated into theſe myſteries.—But we go a ſtep farther, and obſerve, that the improvement of this ſcience may not only be ſubfervient to medical purpoſes, but alſo to *mental* and *moral* uſes, if the attempts to eſtabliſh *materialiſm* ſhould ſucceed. For if, contrary to expectation, it ſhould be generally believed, that the ſimple principle in man, which *thinks* and *wills*, is either a grain of ſalt, or a bubble of air, or an electrical ſpark, or a drop of water, or a globule of oil, or a particle of earth, or a piece of glaſs,—why then it is not impoſſible that the divining rod, by the intervention of magnetiſm, electricity, &c. may form intereſting communications with the faculties and affections, the tranſactions and ſecrets of this principle, which as yet is inviſible. It may diſcover *mines* of virtue which are hid, and pure *currents* of generoſity and genius, which run under ground, unnoticed and unknown. It may bring to light *motives*, plans, and purpoſes, that would undeceive dupes, and diſconcert impoſtors. But alas! we know already too much of poor humanity, both in private and public ſcenes, to need or deſire any farther manifeſtations of its miſery and folly.

ART. IV.

Lettre ſur la Litterature Allemande, &c. i. e. A Letter concerning German Literature, addreſſed to Her Royal Highneſs the Ducheſs Dowager of Brunſwick-Wolfenbuttel, tranſlated from the German. 12mo. Berlin. 1781.

IT is reported, that the Royal Author of a letter on this ſame ſubject (of which we gave a ſhort account when it appeared), deſired to know the ſentiments of the learned and reſpectable Abbé JERUSALEM concerning his performance; and, that

that to gratify this desire, his royal sister addressed herself to the Abbé, and thus gave occasion to the Letter now before us. The Abbé is a rational divine, a good philosopher, and an insinuating courtier; withal a worthy and virtuous man. The royal author had laid himself more or less open to criticism, by confounding too much the state of literature in Germany, in the earlier part of the present century, with the very advantageous revolution that has been progressively improving taste and genius in that country for these last forty years. The Abbé, indirectly, and with all the mellifluous gentleness of which contradiction is susceptible, corrects this error, and makes the proper distinctions. His principal design in this Letter, is to shew 1st, the obstacles (not yet entirely removed) that have retarded the progress of the *belles lettres* and sciences in Germany; and, 2dly, to indicate the successful attempts that have been made, by the native energy of genius, in that country, notwithstanding these obstacles.

Under the first of these articles, the ingenious Author mentions the wars, which beginning at the period when the exiled muses took refuge in the West, continued so long to ravage Germany;—the circumstances of the German empire, which exhibits to learning no common protector, no fixed residence;—the contempt which the grandees have almost always shewed for literature, as below their *dignity*, and only fit for the lower ranks in society;—the little encouragement given to learned men, who were scattered here and there, seeking for a bare subsistence by laborious occupations, which extinguished genius, and who, when they had not the badge of nobility, were excluded from courts, kept at a distance from the commerce of the polite world, and obliged to live in a discouraging obscurity. These and other obstacles to the progress of taste and genius are pointed out by this respectable Writer in a very interesting manner.

He observes farther, that Germany was indebted, for *the first dawn of good taste*, to the French, and more especially to a colony of that nation, which fled from persecution, and found an asylum in the territories of the Elector of Brandenburg. This colony, according to our Author, polished the rough Germans by the elegance of their *insinuating* manners, the beauty and harmony of their language, and the masterly productions of their poets, orators, and historians, which were superior to any thing which Germany had as yet exhibited in the line of literature.——But these advantages were not exempt from inconveniences. The more learned Germans studied and admired the French language, but began to be almost ashamed of their own; at least many despaired of being ever able to render it elegant and harmonious. This discouragement suppressed emulation,

lation, and thus the importation of French eloquence retarded the progreſs of German literature.

Our learned and courtly Abbé places the happy, the halcyon epocha of German literature, at that *ever memorable* and glorious point of time, when *Frederick II.* aſcended the throne of Pruſſia. 'The protection, *ſays he*, and the extraordinary favours, with which this prince had already honoured the ſciences, animated the learned Germans to deſerve them by renewed efforts of emulation and induſtry. And ſince that period, genius, notwithſtanding the difficulties that it has *yet* to encounter, has by the vigour and perſeverance *alone*, that are peculiar to it, as alſo by the fruits of unwearied application, made ſuch a rapid progreſs in Germany, as perhaps no other nation can boaſt of in the ſame ſpace of time, whatever its advantages for improvement may have been.'—This is true in fact; but there ſeems to be a painful ſtruggle between ſincerity and civility in the incenſe offered on this occaſion. The epocha of the literary revolution in Germany, is, we believe, well marked; but how far the *great perſonage* may be conſidered as the foſterer of the German muſes, is another queſtion. That he has always been a patron of learning and learned men, is not to be denied; but, that he has been the encourager of *German* literature, and of *German* philoſophers, hiſtorians, and poets, we dare not affirm. He has ever profeſſed a kind of averſion for the German language, and has ſeldom honoured, with marks of diſtinction, the men of letters in that country. The royal academy of Berlin is certainly compoſed of men of the firſt merit; but, if we are not miſtaken, the greateſt part of its members are foreigners.—We could mention ſeveral particularities, that ſhew how far German literature and philoſophy have received encouragement from the great prince, under whoſe noſtrils our Abbé holds the panegyrical cenſor with no very firm hand, though its odours are elegant and pleaſing.

Be that as it may, letters and ſcience have certainly made a rapid and conſiderable progreſs in Germany ſince the epocha mentioned by our learned Author. He alleges, as proofs of this, the *Poems* of HALLER, the *Meſſiah* of KLOPSTOCK, the *Idyls* and the *Death of Abel* of GESNER, the *Romances* of WIELAND, the *Fables* and *Moral Writings* of GELLERT, the elegant and witty productions of LESSING, LICHTWER, ENGIL, and CRAMER, and the *Philoſophical Writings* of SULZER, the Jew MENDELSON, ENGEL, and GARVE, which would undoubtedly do honour to any nation in Europe.

The royal plaintiff, in this literary cauſe, had alleged in his letter, that Germany was deſtitute of eminent orators, of good dramatic writers, and able hiſtorians. The reverend Defendant almoſt owns the charge, as to the firſt article. He however

obſerves that the *D'Agueſſeaux*, the *Maſſillons*, and others mentioned by the illuſtrious critic, derived peculiar advantages, with reſpect to eloquence, from the conſtitution of the courts of juſtice in France, from the academies erected there profeſſedly for the improvement of oratory, and from the tone, which the genius of popery naturally gives to the productions of the pulpit. Theſe advantages do not exiſt in Germany. *There* the law-proceedings are carried on in a barbarous language. The public academies are merely literary or philoſophical. And the ſacred orators in the Proteſtant parts of the empire, having neither miracles, nor viſions, nor pompous legends to ſwell their eloquence, want many inſtruments of declamation that ſet fancy a going in the Romiſh pulpits. The Proteſtant preachers (ſays our Abbé, who is himſelf one of the moſt eminent in that order) are, by their views of Chriſtianity, happily confined to, or at leaſt are obliged to confine themſelves to, ſimplicity, good ſenſe, and perſpicuity in their compoſitions; nor are they allowed, by the true ſpirit of their profeſſion to exceed that temperate warmth, that mitigated vehemence, which the ſacred truths and obligations of religion are ſo admirably adapted to excite by their excellence and importance, and to modify by their ſolemnity. Our Abbé obſerves very juſtly, on this occaſion, that the eloquence of mild and gentle warmth is much more adapted to touch the heart, than either the over-vehement, or over-florid ſpecies of declamation which ſeldom gets farther than the fancy. We are quite of the ingenious Abbé's opinion. When ſimplicity is wanting in ſacred eloquence, the orator becomes unhappily the principal object of regard; and, even in men of good intention, there is an imperceptible *vanity* accompanying principle, and even zeal that allures them to become ſo. In ſuch caſes, truth and duty ſuffer, by the ſplendor of their attire. The hearers admire the preacher, and forget themſelves; and thus the end is loſt by the very means that were deſigned to promote it. We are not indeed of our Author's opinion, when he ſays, that with reſpect to the kind of compoſition, which he looks upon as the moſt adapted to perſuade, and touch effectually; Germany exhibits ſome orators that ſurpaſs the greateſt models of pulpit eloquence among the French and Engliſh. At leaſt, after having read ſeveral ſermons of the moſt celebrated German preachers, we have found few or none of them equal to thoſe of our ATTERBURY, not to mention the diſcourſes of Dr. BLAIR, who certainly has a peculiar manner of arraying *truth* with that chaſte ſplendor, that never alters *her* ſweet and native ſimplicity. His ſermons are, we think, excellent models with reſpect to taſte, judgment, method, and expreſſion. There is in them a tone of gravity and conviction that fixes the mind *directly* on the ſubject. We read ſeveral of them, without think-

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ing once of the author. If we might be allowed the compariſon, we would call this highly revered artiſt the GUIDO of the preachers.

The royal Cenſor of German genius complains of the dramatic writers of that nation; and our author acknowledges, that it is only of late that his countrymen have made any progreſs in this walk of literature. He however maintains, that their progreſs, though late, is rapid and conſiderable; and, for a proof of this, he appeals to the dramatical compoſitions of Engel, Leſſing, and Leiſewitz, which, as he obſerves (and we believe with truth), would be applauded on the theatres of London and Paris.

As to the hiſtorical writers, our Abbé confeſſes, that, for a long time, their compoſitions were very imperfect, and exhibited rather accounts of the emperors, than a hiſtory of the nation. But he obſerves, that Maſcow, Schmidt, Moeſer, and Leiſewitz, have wiped off this reproach. The laſt of theſe writers, ſays he, is at preſent employed in compoſing a hiſtory of the famous war of thirty years (a moſt intereſting ſubject and period!), which will deſerve a place on the ſame ſhelf with Robertſon's Hiſtory of Charles V.

The Abbé's reflexions on the German language, its defects and advantages, are judicious and elegant, and contain ſatisfactory anſwers to what his illuſtrious antagoniſt had ingeniouſly obſerved on that head; but we paſs them in ſilence, as they cannot be intereſting to the generality of our readers.

ART. V.

Nouveaux Memoirs de l'Academie Royale des Sciences et Belles Lettres de Berlin. i. e. New Memoirs of the Royal Academy of Sciences and Belles-Lettres of Berlin, for the Year 1779. Printed at Berlin, 1781.

HISTORY OF THE ACADEMY.

AMONG the articles that occupy this part of the volume now before us, two merit particular attention, and of theſe we ſhall give a compendious account. The firſt conſiſts in two letters, written by M. D'ANSIE DE VILLOISON, from Venice: one addreſſed to M. Formey, ſecretary to the Academy; and the other to M. Caſtillon. The writer, whom we had formerly occaſion to mention, is a firſt-rate ſcholar; and his ardent application to the ſtudy of literature, directed by an elegant taſte and an acute judgment, has already given him a high rank in the learned world. The excellent Greek MSS. that dwell almoſt unheeded in the library of *St. Mark*, at Venice, drew M. VILLOISON to that city, and he has found the trouble

trouble of his journey amply rewarded by the hidden treaſures of Grecian literature which he has diſcovered there.

The moſt curious and important manuſcript which he found in this collection, is an ILIAD of the tenth century, written on vellum, in a large folio ſize, and enriched with the notes and *ſcholia* (hitherto unpubliſhed) of ſixty of the moſt eminent critics of ancient times. Theſe *ſcholia*, which our academician looks upon as ineſtimable, are written on the margins in ſmall characters, with ſuch fine ſtrokes of the pen, as render them but barely legible. They are entirely different from the *Euſtathius* of Leyden, from that of Leipſic, from the *Scholia Horneiana*, from thoſe at the end of the Cambridge edition, and alſo from thoſe that the learned M. Waſſemberg, of Franeker, has collected on the two firſt books of the Iliad. Beſide theſe ſcholia, the MS. under conſideration contains *Various Readings*, equally numerous and important, drawn from the ancient editions of Homer, which were given by the cities and ſtates of Chios, Cyprus, Crete, Marſeilles, Sinope, and Argos; editions hitherto only known by name, and by ſome citations of Euſtathius. It alſo exhibits a great quantity of various readings, drawn from the two editions of the famous *Ariſtarchus*, the two of *Antimachus*, of *Colophon*, from thoſe of *Zenodotus*; and *Ariſtophanes* of Byzantium, who was librarian of Alexandria under Ptolemy Philadelphus; from thoſe of *Calliſtrates* (the diſciple of Ariſtophanes); *Rhianus*, a poet, who flouriſhed under Ptolemy Euergetes; the Egyptian Soſigenes, a Peripatetic philoſopher, and Philemon of Crete.

To enter into a farther detail of the literary treaſures contained in this MS. would carry us too far. The curious will find them ſpecified at length in this intereſting letter; from which it appears, that *this* Homer may (as our author obſerves) be properly called the *Homerus Variorum* of all antiquity, and more eſpecially the Homer of the famous ſchool of Alexandria. M. DE VILLOISON enumerates all the ancient critics whoſe ſelect notes are collected in this MS.; of whom the moſt modern lived in the times of the firſt Roman emperors. He alſo mentions the principal authors from whoſe works this collector has quoted and explained a variety of paſſages, that throw new light on ſeveral parts of the Iliad.

Another particularity in this MS. that renders it precious, is its containing, at the margin of each line, the critical marks (σημεῖα) which the ancients employed to denote the verſes that were falſely attributed to Homer, thoſe that were doubtful, thoſe that were obſcure, thoſe that were corrupted, thoſe that were remarkable; as alſo the falſe corrections of *Ariſtarchus* and *Zenodotus*, the falſe readings of *Crates*, the tranſpoſitions, amphibologies, mythological or hiſtorical antiquities, the mo-

ral ſentences, the expreſſions peculiar to Homer, the expreſſions which are Attic, thoſe which have various ſignifications, the paſſages erroneouſly employed by certain critics, to prove that the Iliad and Odyſſey were not compoſed by the ſame author, &c.

Our author has alſo diſcovered, in the ſame library, a ſmall Greek treatiſe, which has furniſhed him with an explication of theſe critical marks, and a key to the different cyphers. This he intends to prefix to the new edition of the Iliad, which he propoſes to publiſh from this valuable MS. with the σημεῖα, and the prodigious quantity of various readings and notes, that have been already mentioned.

This edition will excite no ſmall ſurpriſe, ſays M. VILLOISON, both by the number and importance of the various readings, and alſo by ſhewing the ſtrange manner in which the copiers have disfigured the text of Homer, as it ſtands at preſent.

This ingenious and ſucceſsful adventurer in literature has alſo copied, in the library of St. Mark, a new Greek verſion of the Pentateuch, of the three books of Solomon, of Ruth, of the Lamentations of Jeremiah, and of the book of Daniel. This valuable verſion, which has never been publiſhed, is entirely different from that of the LXX. and from all thoſe of which *Montfaucon* and *Bahrd* have given us fragments in their editions of the Hexapla. It is alſo more accurate and more literal. As it is tranſlated, word for word, from the Hebrew text, it ſupplies the place of the ancient MS. from which it was compoſed. Mr. V. mentions ſeveral reaſons which convince him that this verſion was made by a Jew, and that it formed the 7th or 8th volume of the *Hexapla* of Origen.

In the letter to M. Caſtillon, M. DE VILLOISON repeats what he had ſaid concerning Homer, and mentions a work of his, as in the preſs, to which is ſubjoined a farther account of the fruits of his reſearches in the library of St. Mark. We ſhall give the principal contents of this work in a ſucceeding article.

Eulogy of M. SULZER.—This excellent, this *true* philoſopher, whoſe memoirs, in this academical collection, we have ſo often peruſed and reviewed with pleaſure, was born at Winterthun, in the canton of Zurich, October 16, 1720. He was the youngeſt of twenty-five children. His early education did not promiſe much, though it was by no means neglected. He had little inclination for what is called in the ſchools the ſtudy of humanity, and made but a ſmall progreſs in the learned languages, which were to prepare him for the ſtudy of theology, for which profeſſion his parents deſigned him. At the age of ſixteen, when he went to the academical ſchool of Zurich,

Zurich, he had not the ſmalleſt notion of the ſciences, or of elegant literature, and conſequently no taſte for ſtudy. The firſt incident that developed a hidden germ of philoſophical genius, was his meeting with *Wolf*'s metaphyſics; this was the birth of his taſte for ſcience; but he wanted a guide. The clergyman with whom he lodged was (no uncommon thing!) an ignorant man, and the academical prelections were, as yet, above the reach of his comprehenſion. On the other hand, a ſedentary life was not the thing he liked, nor to which he had been accuſtomed; and, moreover, a ſociable turn of mind led him often into company, where he loſt much time in frivolous amuſements, yet without corrupting his morals. Who, that obſerved him, ſays Mr. Formey, at this period, would have thought that SULZER would one day be numbered among the moſt knowing and wiſeſt men of his time? The learned *Geſner* was the inſtrument of Providence, that rendered Sulzer's inclination to ſtudy triumphant over his paſſion for amuſement and company. Animated by the counſels and example of this worthy and learned man, he applied himſelf to philoſophy and mathematics with great ardour, and reſumed the purſuit of Grecian literature and the Oriental languages. The contemplation of nature became his noble and favourite paſſion. An eccleſiaſtical ſettlement in a rural ſcene, that exhibited happy objects and occaſions for this delightful ſtudy, began to render his days happy and uſeful; and he publiſhed, in 1741, *Moral Contemplations of the Works of Nature*; and, the year following, an *Account* of a voyage he had made through the Alps; which ſhewed, at the ſame time, his knowledge of natural hiſtory, and the taſte and ſenſibility with which he ſurveyed the beauties of nature, and the grandeur and goodneſs of its author. He afterwards became private tutor to a young gentleman at Magdeburg. This procured him the acquaintance of Meſſrs. *Maupertuis*, *Euler*, and *Sack*, which opened to his merit the path of preferment, and advanced him ſucceſſively to the place of mathematical profeſſor in the King's College at Berlin, in 1747, and to that of member of the Royal Academy in 1750.

In this laſt quality he diſtinguiſhed himſelf in a very eminent manner, enriched the claſs of *Speculative Philoſophy* with a great number of excellent memoirs, and was juſtly conſidered as one of the firſt-rate metaphyſicians in Germany. But his genius was not confined to this branch of ſcience. His *Univerſal Theory of the Fine Arts*, is a capital production. A profound knowledge of the arts and ſciences, and a perfect acquaintance with true taſte are eminently diſplayed in this work, and will ſecure to its author a permanent and diſtinguiſhed rank in the republic of letters. The firſt volume of this excellent work was publiſhed in 1771, and the ſecond in 1774. We ſhall

not

not here give a catalogue of the writings of M. Sulzer; but we cannot help mentioning his *Remarks on the Philoſophical Eſſays* of the late Mr. HUME, as a work of real merit, which does juſtice to the acuteneſs, while it often detects the ſophiſtry of the Britiſh *Bayle*. The moral character of M. SULZER was amiable and virtuous: ſociability and beneficence were its characteriſtical lines; and his virtues were animated by that ſacred philoſophy that forms the *Chriſtian*, ennobles man, and is the only ſource of that heart-felt ſerenity and ſedate fortitude, which ſupport humanity, when every other object of confidence fails. His dying moments were calm, humble, and ſublime; and when he expired, the placid and compoſed air of his countenance made his mourning friends doubt, for ſome time, whether it was death, or ſleep, that had ſuſpended his converſation. He had no enemy; and his friends were numerous, affectionate, and worthy of the tender returns he made them.

The king of Pruſſia diſtinguiſhed him by repeated marks of munificence and favour. We learn, however, with ſome ſurpriſe, from the eulogy before us, that his royal protector had never ſeen him before the end of the year 1777, though he had been member of the academy from the year 1750. The audience, indeed, though late vouchſafed, was honourable to M. Sulzer, with whom the monarch converſed for a long time with the greateſt affability and condeſcenſion.

EXPERIMENTAL PHILOSOPHY.

Mem. I. *An Account of ſome Attempts to obtain Kunkel's Red Glaſs, already coloured, when taken from the Crucible.* By M. MARGRAFF. Kunkel's glaſs is always white and tranſparent when it comes from the crucible, and only aſſumes its beautiful red colour when it is warmed at a flame.

Mem. II. *Experiments relative to a new Method of diſengaging the Copper from the Mine.* By the ſame. The celebrated M. Pott is ſaid to have diſcovered a method of diſengaging the copper from its mine by one ſingle fuſion, and to have died without communicating to any perſon the means he employed for this purpoſe. At the earneſt deſire of the late M. Sulzer, our Academician made ſeveral trials of this kind, and ſucceeded. He deſcribes his proceſs in this Memoir.

Mem. III. *A new Method of extracting Pruſſian Blue from all kinds of Cobalt, for the uſe of China Manufactures.* By M. GERHARD.

Mem. IV. *Concerning a new Method of producing, with a very ſmall quantity of Coals, or other inflammable Subſtances, a Heat equal to that which is obtained by Mirrors and Burning-glaſſes of a conſiderable ſize: Together with the Deſcription of a Stove, which, while it warms an Apartment, purifies the Air which it contains, by depriving it of its Phlogiſton.* By M. ACHARD. It was by tranſmitting

mitting a current of dephlogiſticated air through burning coals, that our ingenious Academician produced a quantity of heat which the burning body could not have produced in the common atmoſpherical air, which always contains a certain quantity of phlogiſton; and in proportion to this quantity is leſs proper to accelerate inflammation, as the experiments of Dr. Prieſtley, often repeated by others, abundantly teſtify. We refer our Readers to the Memoir for an account of M. ACHARD's Experiments relative to this object. Dephlogiſticated air may be obtained in large quantities, with little trouble, and at a very ſmall expence; and every kind of air may be eaſily deprived of its phlogiſton, as M. ACHARD has fully ſhewn in this Memoir, and in another contained in the preceding volume. Common air, tranſmitted by a bellows through fuſed nitre, loſes all its phlogiſton by its imperceptible detonation with the nitrous acid, ſo that it comes dephlogiſticated out of the bellows. The quantity of heat that was added to the flame of a ſmall lamp, by conveying to it a current of dephlogiſticated air, melted, in two ſeconds, a rod of iron one-fifth of an inch in diameter, and made it diſſolve in burning drops; but ſtill greater effects were produced by coals.

Beſides the advantages, with reſpect to the production of an intenſe heat, that natural philoſophy and chemiſtry may reap from the dephlogiſtication of common air, effectuated by its tranſmiſſion through nitre in fuſion, this operation may be employed for a purpoſe equally important, and in which it will be of more general utility: for, by it, the dephlogiſtication of the air of an apartment may be carried to any degree that may be judged expedient. The conſequence of which this may be to health and ſpirits is not at all dubious. It is well known how both are promoted by the purity of the air which we breathe; and our academician has obſerved hypochondriac perſons paſs from a ſtate of gloomy anxiety to a ſtate of ſerenity and comfort, by paſſing from the common air into an apartment where the air had been dephlogiſticated. He gives here an ample deſcription of the eaſieſt method of freeing the air of a room of its phlogiſton, in any degree that may be deſired. In this method, the ſame ſtove that warms the apartment is employed in melting the nitre: and as this would render the operation impracticable, or at leaſt intolerable, at certain times of the year, when the weather is temperate or warm, on account of the degree of heat required in the ſtove to fuſe the nitre, M. ACHARD indicates a very ingenious method of remedying this inconvenience. We recommend the peruſal of this memoir, in a particular manner, to thoſe who are concerned in the direction of hoſpitals, where noxious air ſo often baffles all the efforts of the phyſician. All we can do is, to indicate the ſources of

uſeful information.—Want of ſpace muſt often hinder us from entering into particulars.

Mem. V. *Concerning the Analogy that there is between the Production and the Effects of* Electricity *and* Heat; *as alſo between the* Property *in Bodies by which they* conduct *the electrical Fluid, and* that *which renders them ſuſceptible of Heat. To which is added, the Deſcription of a new Inſtrument, adapted to meaſure the Quantity of the electrical Fluid which is* conducted *by Bodies of a different Nature placed in the ſame Circumſtances.* By M. ACHARD.—This is no more than a ſhort abridgment of an ample memoir, which the indefatigable academician has compoſed upon this curious ſubject. It is divided into three parts. In the firſt, M. ACHARD endeavours to prove, that the *production of electricity is ſimilar to the production of heat.*—In the ſecond he ſhews, that the effects produced by the electrical fluid are analogous to thoſe produced by the igneous fluid. In the third he proves, that there is a perfect reſemblance between the aptitude of bodies to *conduct* the electrical fluid, and their aptitude to receive heat.

In the *firſt part*, the point of reſemblance is rubbing or friction, by which both electricity and heat are produced. It may be objected, that the analogy here is not perfect; ſince metals, and the bodies which are generally conſidered as *conductors*, become electrical, according to the notion commonly received, only by their contact with bodies originally electrical, which are rubbed; and that the rubbing, directly, theſe bodies (the conductors), cannot render them electrical. In order to anſwer this objection, M. ACHARD remarks, that when a body, originally electrical, is electrified by being rubbed againſt a body which is a conductor, the latter, when inſulated, exhibits ſigns of electricity, as palpable as thoſe which are given by the body that is electrical *per ſe*. Now, ſays he, this electricity is not communicated to the conductor by the body that is originally electrical, becauſe it is negative in the conductor, when the electricity of the original electric is poſitive, and *vice verſâ*. After having laid down the theory that is deducible from this obſervation, and is confirmed by facts, our author concludes, firſt, that rubbing always produces electricity in *all* caſes, of whatever nature the bodies may be; and that when the electricity is not palpable, this only proceeds from its being loſt in the very moment that it is produced:—ſecondly, that there is no body, which, being rubbed againſt another that tranſmits the electrical fluid with more or leſs difficulty, does not exhibit marks of electricity; and that metals are as electrical in themſelves *(per ſe)* as glaſs and reſins. (This propoſition, ſays our author, is only contradictory in appearance—the contradiction will vaniſh on a cloſe examination.)

Thirdly,

—Thirdly, that as rubbing always, and in all caſes, produces electricity, the analogy between the production of heat and electricity is perfect.

In the *ſecond part*, the points of reſemblance between the *effects* produced by heat and electricity are as follows: 1. They *both* dilate all bodies. 2. They *both* accelerate vegetation and germination; and it is remarkable, that *poſitive* electricity accelerates vegetation as much as negative: from whence it follows, that the *effects* of the electrical fluid do not proceed from the augmentation or diminution of its quantity, but from the repulſion of the parts of bodies, which have a degree of electricity (whether poſitive or negative) different from that of the medium in which they are placed. 3. They *both* accelerate evaporation. 4. They *both* accelerate the motion of the blood in animals. 5. They *both* contribute to the formation and developement of the fœtus in animals, as appears by our author's experiments on hens-eggs, formerly mentioned; and thoſe made, by other naturaliſts, on the eggs of the butterfly. —6. They *both* reduce metals, and other bodies, to a ſtate of fuſion. Theſe, and other reaſons, prove a great analogy between the effects of *heat* and *electricity*.

In the *third part*, the ingenious academician proves, from ſome curious obſervations, that ſeveral bodies, which receive and loſe, with difficulty, their preſent degree of heat, receive alſo, and loſe, with difficulty, their electricity? Repeated and multiplied experiments are neceſſary to determine, whether or not this law is general and without any exception. To make theſe experiments, and to compare bodies with reſpect to their property of *conducting* the igneous and the electrical fluids, it was neceſſary to have an inſtrument capable of meaſuring and aſcertaining the degrees in which bodies *conduct* electricity. Our academician thinks this a matter of great conſequence towards the improvement of the theory of electricity; and is ſurpriſed that it has been hitherto entirely neglected. He has, therefore, conſtructed an inſtrument, by means of which it will be poſſible to aſcertain, with great accuracy, the quantity of electricity which a body loſes in a given time, by touching another body that is not electrified. For the deſcription and uſe of this inſtrument we refer our readers to the memoir itſelf. M. ACHARD does not give us here an enumeration of the experiments he has made with it, nor their reſults: but theſe we may expect in ſome future memoir.

Mem. VI. *Concerning the Changes which Earths, mixed with metallic and ſemi metallic Calxes undergo, when they are expoſed to a Fire that produces Fuſion.* By M. ACHARD.—This very curious and elaborate memoir is not ſuſceptible of abridgment.

The results of the experiments it contains are exhibited in tables which occupy ſixteen pages.

Mem. VII. *Experiments relative to the Vitrification of Animal and Vegetable Earth, mixed, in different proportion, with metallic Calxes.* By the ſame.—Tables in abundance.

Mem. VIII. *Concerning the Changes which the Earths, contained in the Fluor or Spar, which is volatilized by Acids*, occaſions by Fuſion in ſimple *Earths, Metals, metallic Calxes, and ſaline Subſtances.*—By the ſame.

Mem. IX. *Experiments made in treating ſedative Salt by the dry Method, with Metals, Earths, and metallic Calxes.* By the ſame.—It appears from theſe experiments, that ſedative ſalt, all whoſe properties, as alſo its manner of acting on other bodies, are not yet known, poſſeſſes, in a very eminent degree, the property of fuſing and vitrifying earthy ſubſtances. Hence we learn how borax, in whoſe compoſition ſedative ſalt is an ingredient, contributes ſo much to facilitate vitrification.

MATHEMATICS.

Mem. I. *Concerning different analytical Queſtions relative to the Theory of particular Integers.* By M. DE LA GRANGE.

Mem. II. and III. *Concerning the Conſtruction of Geographical Maps.* By the ſame.—It is well known that the ſpherical, or, rather, ſpheroidical form of the earth, renders it impoſſible to repreſent, on a plane, any part of its ſurface without altering the reſpective ſituations and diſtances of different places; and that the greateſt perfection of a geographical map muſt conſiſt in the ſmalleſt poſſible alteration of theſe diſtances. The various kinds of projections hitherto employed for this purpoſe, are ſufficiently known; but they are all defective, by altering more or leſs the magnitude and figure of the different countries that are repreſented on the map. The late M. *Lambert* conſidered the theory of maps under a new and general point of view, and formed the idea of determining the lines of the meridians and parallels in ſuch a manner only, that all the angles on the plane of the map ſhould be equal to the correſponding angles on the ſurface of the globe. This problem was ſucceſſively ſolved by him and M. Euler; but theſe two eminent men went no farther than to ſhew, that the known theories of the ſtereographic projection, and of reduced charts, are comprehended in their ſolution of the problem; and no one has hitherto attempted giving theſe theories all the extent of which they are ſuſceptible, by determining all the caſes in which the ſolution, in queſtion, can furniſh circles for the meridians and parallels. This curious reſearch, which is intereſting, both by the analytical operations it requires, and the utility of which it may be to the improvement of maps, employs our learned academician in this and a following memoir. He firſt ſolves the pro-

problem, in queſtion, by a method different from that of Meſſrs. *Lambert* and *Euler*, and which is more ſimple, and alſo more general in ſome reſpects. He then applies the general ſolution of it to the particular caſe, in which it is ſuppoſed that the meridians and parallels are circles, which are the only curves that can be employed with facility in the conſtruction of geographical charts: and he afterwards ſolves other queſtions relative to this object, from whence ſeveral uſeful conſequences reſult. Theſe two memoirs are maſterly in the higheſt degree.

Mem. IV. and V. *An Eſſay relative to a new Method of determining the ſecular Diminution of the Obliquity of the Ecliptic, by the Polar Star.* By M. JOHN BERNOULLI.

Mem. VI. *Concerning the Irregularities that take place in the motion of Saturn.* By (the late) M. LAMBERT. — Mem. VII. *Concerning the Irregularities of the Motion of Jupiter.* By the ſame.—Theſe two elaborate memoirs, which rectify the tables of *Halley*, correct many errors in aſtronomical calculations, and are ſtriking proofs of the *labor improbus*, that their ingenious and extraordinary author was capable of employing on an intricate and difficult ſubject, are not ſuſceptible of an abridgment.

Mem. VIII. *Concerning a moving Globe, which repreſents the Motions of the Earth.* By M. CASTILLON.——The particular deſcription here given of this curious machine, would not be intelligible to our readers without the uſe of the figures that accompany it. This ſphere, which is the invention of M. CATEL, a merchant of Berlin, is an automaton moſt ingeniouſly contrived, and happily executed. It is no more than half a foot in diameter. It repreſents all the motions of the earth, its diurnal motion directly, its annual motion indirectly; and it indicates the parallelism of the earth's axis, which is the reſult of the earth's double motion round the ſun and its own axis. It goes by clock-work, and is wound up every eight days.

SPECULATVIE PHILOSOPHY.

Mem. I. *Concerning Phyſical Unities.* By M. BEGUELIN.—Second memoir. We were ſo glad to get quit of the long and indeterminable conteſt between material atoms, and the *infinite* diviſibility of matter, that we ſaw with ſome pleaſure a new hypotheſis coming forth, hoping that it might give our wearied imagination a more eaſy reſting-place than the fairy-tale of *Monades*, the dream of *Idealiſm*, and the late phantom of *coheſion* Accordingly, in our laſt Appendix, we made a civil philoſophical bow to the primitive *automata* or *phyſical unities*, which M. BEGUELIN introduced to us as the *true elements* of the univerſe. They were ſo well dreſſed, and looked ſo plauſible, that we introduced them to the acquaintance of our Read-

ers. We know not how they have been received; for our own part, experience has taught us to open the arms of our confidence but ſparingly to ſtrangers, ſo that we ſtill look at theſe *unities* with a ſuſpicious eye. We have yet a ſecret apprehenſion that they are Monades, in a new coat; at leaſt they have a great affinity to that family. And are we wrong in thinking ſo, ſince our author told us plainly, in his former memoir, that our idea of matter, as an *extended* and *impenetrable* ſubſtance, had no real object beyond our abſtract conceptions? Beſide, M. BEGUELIN is a moſt ſeducing writer, and has ſuch a bewitching knack at dreſſing up an hypotheſis with an elegant ſimplicity, that we cannot be blamed for being on our guard, and imagining ſometimes, *that the coat makes the man*, though the old proverb ſays otherwiſe.

Be this as it may—Our academician goes on. We ſhall follow him for a moment, and give our readers ſome glimpſe of his farther proceedings. In his former memoir he propoſed to himſelf eleven queſtions relative to theſe *unities*, and we gave his anſwers, ſo far at leaſt as they affirmed or denied, and ſometimes with an account of the reaſons annexed. We ſhall do the ſame with the farther queſtions contained in the memoir now before us.

QUES. XII. *Have the Unities of Nature, which are endowed with Perceptions, the Power of perceiving in Conſequence of their Organization? or do they derive this Power from ſome external Cauſe prior to this Organization?*——He does not know. He inclines to the latter, however; but as this inclination is only owing to the total non-exiſtence of any analogy between *machines* of *human* invention and *perception*, he is not quite ſure that this is the caſe with reſpect to the *divine automata*, or phyſical unities.——QUES. XIII. *Are the Unities of Nature all homogeneous? Or in what does their individual Diverſity conſiſt?*—Without denying that there may be ſome of theſe unities entirely ſimilar in their firſt origin, he thinks it evident, from the contemplation of the univerſe, that the greateſt part of theſe primitive elements differ exceedingly from each other, and that this difference encreaſes gradually, from the machines in which the organization is the moſt imperfect, to thoſe in which it is the moſt perfect.———QUES. XIV. *Have all the Unities of Nature always Perceptions?* Yes. And here, methinks, the Monades peep out.—QUES. XVI*. *How can the primitive Unities of Nature acquire* a diſtinct Perception of *their Perſonality?* This is undoubtedly a crabbed queſtion; whatever hypotheſis we adopt with re-

* We paſs over ſome of theſe queſtions for the ſake of brevity, and other reaſons.

ſpect

ſpect to the nature of the ſoul, and we are here, as in a multitude of other caſes, obliged to grant the fact, without being able to explain it diſtinctly. If (ſays our author) any organization be neceſſary to conſtitute memory, which aſcertains our *perſonal identity*, it is more natural to place it in the *me*, than elſewhere, and to conſider the brain and the other groſſer organs as auxiliaries, deſtined to facilitate the firſt developements of the activity of the primitive automaton. It may be ſo.——Ques. *Do the Unities of Nature always preſerve the Conſciouſneſs of their Perſonality?* There are excellent philoſophical views in M. B's anſwer to this queſtion,—views that announce and prove immortality; but we do not think them leſs applicable to the ordinary hypotheſis concerning the nature of the ſoul, than to his notion of it, as the primitive and predominant unity in man. He anſwers the queſtion in the affirmative, ſeeing no reaſon why death, or the decompoſition of groſs and viſible organs, ſhould occaſion the decompoſition of that more refined and intimate organization, which may have belonged to the *primitive automaton* before its entrance into actual life, or deſtroy that original activity which will give it impreſſions and perceptions of the objects that ſurround it, in whatever ſcene it may be placed. Aſtoniſhment, admiration, and embarraſſment muſt naturally, indeed, be ſuppoſed to be produced by its entrance on a new ſcene; but theſe, as our author ingeniouſly obſerves, are proofs of its perſonality;—they ſuppoſe it. A man who, during a long and deep ſleep, is conveyed to a place which he never ſaw before, will find himſelf, on awaking, in a ſituation of mind analogous to that of the ſoul, which ſurvives its body; he will be a ſtranger to every object but to himſelf.——Ques. XIX. *On the Hypotheſis of primitive Unities, whence comes the Propagation of the Species?*—Read our author and he will tell you; but we do not well underſtand him on this point.——Ques. XX. *Are the Unities of Nature ſuſceptible of Liberty in their moral Actions?* Why not? We muſt not judge of theſe *divine machines* to which the Deity has communicated intelligence and volitions, as if they reſembled the groſs compoſitions of human induſtry, which works with quite different materials.——Ques. XXII. *What is the State of the Soul after the Deſtruction of the Body which it animated?* The anſwer to this queſtion (whether we adopt or reject the hypotheſis of M. Beguelin) is excellent and maſterly; and though it is expreſſed in a language peculiar to this hypotheſis, it opens ſome views which we believe to be as true as they are ingeniouſly and happily preſented. He conſiders the mind, when diſengaged from the ſyſtem of organical machines to which it was united, as having loſt its teleſcope, and the inſtruments of its operations; and he examines the effects

which may naturally be ſuppoſed to reſult from this loſs. We cannot follow him in this conjectural diſcuſſion. We muſt, however, obſerve, that his hypotheſis ſecures to the *primitive* predominant *unity* in man, a communication with the material world even after the teleſcope is loſt. The objects, indeed, will be perceived ſomewhat otherwiſe, but ſtill they will be perceived. Thus, for example, when the external organ of ſight and the optic nerve are deſtroyed, the rays will act immediately upon the primitive and indeſtructible automaton, and probably excite, each, a ſenſation ſimilar to that which it formerly excited by the aſſiſtance of the optic nerve: he thinks that, as the *predominant unities* (commonly called ſouls) are *automata*, they may contain in their ſtructure organs correſponding and analogous to thoſe organs of ſenſe that belong to the groſs corporeal vehicle, juſt as the eye is correſpondent and analogous to our artificial teleſcopes. They may contain not only our five ſenſes, but a multitude of other ſenſes of which hitherto we have no idea. Our author deduces very agreeable and ingenious conjectures from this ſuppoſition. He, however, honeſtly warns us, that his whole Memoir turns upon a mere hypotheſis: he gives it as ſuch, and only means to ſhew its plauſibility and advantages. Its *advantages*, at leaſt, are evident; it plucks up, by the root, many weeds from the field of metaphyſical controverſy; it removes many bones of contention: it is, in ſhort, a kind of *philoſopher's ſtone* in the ſphere of metaphyſics, and it wants nothing but to be *really found*. There is certainly no hypotheſis more adapted to remove *all* difficulties, than that which *ſeems* to repreſent the *phyſical* unities as neither material nor ſpiritual, and yet both the one and the other. With ſuch an hypotheſis we may face ſucceſſively adverſities of all complexions.

Mem. III. *Concerning the Problem of Molyneaux.* By. M. MERIAN. VIIth Memoir *. This problem has been whipt about like a top, in a ſtrange manner. They have been *all* at it, and *about* it, and very buſy indeed. This Memoir brings again the Abbé de Condillac on the ſcene, retracting in his *Treatiſe of Senſations* what he had affirmed in a preceding work †, and agreeing with Dr. Berkley in the eſſential parts of the theory, by which he explains this famous problem. M. *Bonnet*, the excellent philoſopher of Geneva, is alſo called up to give his account of the matter: his opinion coincides with that of the Iriſh and French philoſopher; and he puts a negative on the queſtion; *Will the man born blind diſtinguiſh by* SIGHT (when

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* See our former Appendixes.

† In his *Traite de l'origine des Connoiſſances Humaines.*

he

he has received it) *the globe and the cube which he had formerly* TOUCHED?

The amount of all the diſcuſſions on this ſubject comes to this: we will decide the queſtion (ſays M. MERIAN) in the affirmative, if we can perſuade ourſelves that *ſight* and *touch* give the ſame immediate perceptions of the figure of bodies, or that we can derive the ſame ideas from the immediate perceptions which we receive thereof by theſe two ſenſes. We may reaſonably decide the queſtion in the negative, if we can prove, either that ſight gives neither immediate perceptions nor abſtract ideas of the figure of bodies, or that *viſible* and *tangible* figures are neither the ſame nor ſimilar things, but are quite heterogeneous. Again—if we believe that *viſible* figures are *ſigns* or repreſentations of *tangible* ones, and that there is a relation of equality between the number of their parts, as is the caſe between words written and articulate ſounds, we may affirm that the blind man in queſtion may diſtinguiſh the viſible globe from the viſible cube, as *ſign*; if it appears that, of himſelf, he can perceive *that* quality and *that* numerical relation—otherwiſe we muſt deny it. Thoſe who find the reaſons *pro* and *con* nearly in equipoiſe, muſt ſuſpend their judgment.

The reader may think that M. MERIAN has now done; but he promiſes us one Memoir more, which will furniſh means of new diſcoveries. We ſhall expect it with pleaſure.

Mem. III. *Concerning Enthuſiaſm.* By M. BEAUSOBRE.—Senſible and good; but nothing uncommon.

Mem. IV. *Concerning the Method of Teaching employed by Socrates.* By M. CASTILLON.——This is learned, but not maſterly. It looks like the production of a young, but promiſing philologiſt. The line between the academics and the dogmatiſts is drawn here; but we have ſeen it often drawn, and excellently drawn elſewhere.

BELLES-LETTRES.

As this article is already ſwelled to an enormous length, we can only give the titles of the Memoirs contained in this claſs.

Mem. I. *A Diſſertation, deſigned to ſhew the Cauſes of the Superiority of the Germans over the Romans,* and to prove, that the North of Germany, or Teutony, *between the Rhine and the Weiſſel,* and particularly *the preſent Pruſſian Monarchy, is the original country of thoſe heroic Nations, which, in the famous ancient Migrations, deſtroyed the Roman Empire, and founded and peopled the principal Monarchies of Europe.* By the Baron de HERTZBERG. ——Mem. II. *A Diſſertation, containing Anecdotes of the Reign of* FRED. WILLIAM, *the Grand Elector of Brandenburgh, and more eſpecially of his Maritime Exploits.* By the ſame.———Mem. III. and IV. *Concerning the Pſychology* (N. B.) of Tacitus. By M. WEGUELIN. Two Memoirs.—

Mem.

Mem. V. *Concerning national Taſte*, conſidered with reſpect to tranſlating. By M. BITAUBE. Third and laſt Memoir.—— Mem. VI. VII. VIII. Concerning the Origin, hitherto unknown, of the Inhabitants of the German Diſtrict of the Canton of Bern. By M. de FRANCHEVILLE.

ART. VI.

The Works of the Chevalier RAPHAEL MENGS, Firſt Painter to the King of Spain, publiſhed by D. *Joſeph Nicholas d'Azara*, Knight of the Order of Charles III. Member of the Council of Finances, &c. 4to. 2 Vols. Parma.

IN our former extract, [ſee Review for Aug. laſt] of the noble Work now before us, we endeavoured to give our Readers ſome idea of the genius and abilities of this excellent artiſt, as they appear in his writings. At preſent we ſhall make them acquainted with the lines of his character, and the productions of his pencil, by a compendious abridgment of his life, as it is compoſed by the Chevalier d'Azara, from authentic papers *.

ANTHONY RAPHAEL MENGS was born on the 10th of May, 1728, at Auſſig, in Bohemia. His father, who was painter to Auguſtus III. king of Poland, began very early to bend his genius toward the profeſſion which he afterwards exerciſed with ſuch diſtinction. He began at the age of ſix years to draw. He was carefully inſtructed during his early youth in the various methods of painting, in oil, enamel, and miniature. He applied himſelf to the ſtudy of perſpective, chemiſtry, and the branches of anatomy moſt neceſſary for a painter; and when he was thus furniſhed with a ſtock of knowledge, that rendered him capable of ſtudying with advantage the productions of the great artiſts in his line, his father went with him from Dreſden to Rome in 1741. The admiration of young MENGS was excited by the immortal works of ſculptors and painters, ancient and modern, which abounded in that capital; his mind was attracted by their various beauties; and, under the warmth of theſe firſt impreſſions, he aimed at nothing leſs than the imitation of all their reſpective excellencies; but his father, who was a judicious guide, made him confine his ambition to the ſtudy of the moſt perfect models, ſuch as the *Laocoon* and *Torſo* in the Belvidera, the pictures of Michael Angelo, in the chapel which bears the name of Sixtus IV. the fineſt heads in the ſaloons of Raphael, and certain clothed figures in which that immortal artiſt diſplayed his eminent talent for drapery. After four

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* Moſt of theſe papers were left by M. MENGS to the Editor.

years,

years, employed in ſtudying the nobleſt and moſt graceful productions of the pencil and the chiſſel, and in drawing after the beſt models, he returned to Dreſden. There he learned to paint in *crayons*, and was employed at court, where he was honoured with the rank and appointments of king's painter.

His modeſty did not prevent his being expoſed to envy. This is almoſt always the fate of eminent talents, diſtinguiſhed and rewarded. But we turn our attention from objects that do ſo little honour to humanity. Mr. MENGS, during his frequent voyages to Italy, became known to Charles III. then King of Naples, who not long after his acceſſion to the throne of Spain, gave generous marks of his eſteem to this excellent artiſt, and granted him an advantageous and honourable ſettlement at his court. His annual penſion was 2000 double piſtoles; and he was lodged, had a carriage, and was furniſhed with all the implements of his art, at the expence of his royal maſter.

The firſt productions of his pencil in Spain, were ſeveral pictures *in freſco*; the principal of which were, *the Council of the Gods, and the Apotheoſis of Hercules*, repreſented on the Cieling of the king's anti-chamber, an *Aurora*, and the *Four Seaſons*, painted in a ſaloon of the queen's apartments. His picture of *Chriſt taken down from the croſs*, painted in oil-colours, and placed in the king's bedchamber, muſt be a very capital performance, according to the deſcription which the Chevalier d'Azara gives of it in the work before us. 'Every thing, (ſays he) in theſe pictures breathes the tenderneſs of grief and ſorrow. The tone of the colouring reſembles the *Dorian* mode in muſic, and the Doric order in architecture:' (as far he might have added, as the objects of ſight and hearing will admit of a compariſon) 'every figure expreſſes the degree of affliction and ſenſibility that ſuits his character! The ſpectator beholds in the dead *Saviour*, a body that has ſuffered moſt intenſely, but perceives in it, at the ſame time, the remains of a noble figure, and the veſtiges of divine beauty. The artiſt has not disfigured it with wounds or blood, which other painters have done on like occaſions, as if death could not be expreſſed with energy, without diſlocating or mutilating a body, and rendering it frightful or diſguſting.——The *Virgin*, repreſented ſtanding, and with her eyes fixed on heaven, ſeems to offer to the Supreme Being the ſacrifice of ſubmiſſion, amidſt the deepeſt anguiſh of which humanity is ſuſceptible. Her motionleſs and extatic attitude, her hanging arms, the muſcles of her countenance deprived of all action, her blue veil and pale-coloured robe, which are in ſuch harmony with her complexion at this affecting moment, exhibit a figure, which it is impoſſible to contemplate without the tendereſt emotion.—*Mary Magdalene*, whoſe ſorrow is more *human*, is repreſented as taking care of the body. A flood of tears

tears deſcends from her beautiful eyes, and ſhew the tenderneſs of her heart.—*St. John* is drawn with the muſcles of his forehead ſwelled, and his eyes filled with blood, and diſcovers the agony, which the afflicted heart of a vigorous young man muſt ſuffer, when it is not relieved by tears.—A *ſervant* carries a vaſe of perfumes for the tomb, and looks at this groupe of mourning friends, with the ſtupid air of a man who ſuffers a ſort of mechanical ſympathy, without taking any real part in the ſcene that is paſſing.'

Some time after this picture was finiſhed, the Chevalier MENGS, drew another, at Rome, for his Catholic Majeſty, which repreſents *Chriſt's Nativity*, and in which he ſeemed ambitious to contend for the palm with the famous *Night* of Correggio. This admirable piece (of Mengs we mean) is in ſtriking contraſt with that which we have already deſcribed. It is all cheerful beauty, and ſmiling grace. The carnations are life, nature, and truth. There is no light in the picture, but that which beams from the divine child. The Virgin is beautiful beyond nature, and exhibits a ſublime mixture of divine and human beauty. It is in this picture that the *ideal* diſplays its orignal powers.

The king ordered three pictures for the new chapel of the caſtle of Aranjuez, and the Editor tells (as having it from MENGS himſelf) that this admirable artiſt executed the principal of theſe pieces, which repreſents the *annunciation*, in the tone and character of the muſic of *Correlli*. We have always thought that there are many points of analogy between the objects of our different ſenſes, which vulgar geniuſes do not perceive, and even many which the greateſt do not diſcern—at preſent. And we find ſomething that pleaſes us much, and gives us a very advantageous idea of the exquiſite taſte, and the combining powers of this great artiſt, in propoſing to himſelf a muſical model. 'There reigns, accordingly, in this picture' (as the Editor tells us) 'a harmony and melody that affect the ſenſes in a moſt agreeable manner;—the impreſſions are gentle, ſoft, and equable;—among all the tones or teints, there is not one that deſtroys, by its force or feebleneſs, the ſweet effect of another; and yet no diſpleaſing monotony is obſervable in this excellent piece. The *Virgin* is here again repreſented with ſuch lines of ideal beauty, as ſeem above human conception. Her humility and her modeſt joy, that ſucceed an emotion of ſurprize and confuſion, are moſt happily expreſſed. The beauty and air of *Gabriel*, and the other angels that accompany her, are ſuitable to their characters as celeſtial miniſters; and, more eſpecially, the countenance of the firſt denotes the high ſenſation of pleaſure that he derived from his being charged with this important commiſſion.'—The Eternal Father is, however,

however, repreſented perſonally in this picture, a mimetic licence which we ſhall ever reprobate, as the moſt ſhocking violation not only of truth, with which painters are allowed to take certain liberties, but of poſſibility, which expoſes them to the *incredulus odi*. A *glory*, or ſhekinah, is much more proper on ſuch an occaſion, and much more noble and ſublime, than any human figure, however embelliſhed with ideal beauty. We ſuppoſe, that it is to perfect a groupe, that the Deity is often thus *humanized*; but we muſt ſtill repeat *incredulus odi:* it is infinitely more abſurd than repreſenting *Newton* by an *oyſter*, or *immenſity* by an *atom*; for it is rather like repreſenting the figure of a triangle by that of a ſquare; it is not only improbable but contradictory.—M. D'AZARA obſerves, that in his repreſentation of the Supreme Being, MENGS is much ſuperior to *Raphael*, and *Michael Angelo*, who have always given him a ſevere and terrible aſpect; which by the bye, is not true of Raphael, who, at leaſt in one picture, gives Him an air, which though awful, is *ſerene*; and ſerenity is the nobleſt image of Goodneſs. However that may be, MENGS, ſince he was reſolved to perſonify, has done it, perhaps better than his predeceſſors. In place of the violet coloured drapery uſed on this occaſion, by the painters above-mentioned, he has ſubſtituted a white garment, which, ſays our Editor, is more expreſſive of majeſty (rather we think of purity) and goodneſs.—The celebrated artiſt died before this fine picture was entirely finiſhed as to the colouring, though few that ſee it will think ſo.

Mr MENGS was married to a virtuous and beautiful woman, whoſe death afflicted him ſo deeply, that it affected his health, which had been previouſly impaired by aſſidious and intenſe application and labour. He died at Rome in the year 1779, and his death is ſuppoſed to have been, at leaſt, accelerated by the advice and medicines of one of his countrymen, a quack doctor, in whom he imprudently confided. He was interred, in preſence of the Profeſſors of the Academy of St. Luke, in the pariſh church of St Michael, on the declivity of the Janiculum. The Chevalier D'AZARA placed his portrait in Bronze, next to to that of Raphael, in the Pantheon, with the following inſcription:

Ant. Raphaeli Mengs
Pictori Philoſopho
Jos. Nic. de. Azara Amico Suo, P.
M,DCC,LXXIX.
Vixit annos LI, *menſes* III, *dies* XVII.

In M. D'AZARA's remarks on the talents and genius of his friend, he obſerves, that *Raphael*, *Correggio*, and *Titian* were his great models; the firſt for drawing and expreſſion, the ſecond for grace and ſhadow, and the laſt for colouring. It was the

firſt, however, that Mr. MENGS ſtudied moſt, and he could never tire in contemplating the works of that immortal artiſt. Our Editor obſerves, at the ſame time, that the ſtiles of Raphael and Mengs were very different; and he pretends, that it was reſerved for the latter to riſe above Nature, while the former contented himſelf with imitating her in her beſt and faireſt *actual* forms. We conteſted this judgment with reſpect to Raphael in our former extract, when it was pronounced by MENGS; and we alleged againſt it Raphael's letter to Count Balthazar Caſtiglioni. Our Editor mentions this letter; but ſuppoſes it to have been written towards the end of that great painter's life, when, *only*, our Editor thinks, that he began to conceive the poſſibility of heightening the charms of *real* Nature by ideal beauty. He alleges ſtill, that Raphael's productions are within the bounds of real Nature, that his *Madonas* are the portraits of the fineſt women of his time, and that the famous *Madona della Ledia* is no more than a handſome country girl, who gives the breaſt to a beautiful child.—We ſhall diſpute no longer this point; but would be glad to ſee M. D'AZARA favoured with a ſight of the Cartoons at the Queen's houſe.—For the reſt, his manner of expreſſing the *ideal beauty* that characteriſes the moſt celebrated pieces of the Chev. MENGS, does not ſeem to us to ſhew that he had a juſt notion of the thing.

He ſpeaks with more preciſion and truth, perhaps, when he ſays, that Raphael, almoſt wholly attentive to expreſſion, in which he excelled, was more or leſs negligent in his *claro-obſcuro* and colouring; that his tints are ſometimes crude, and his carnations not always of an agreeable red; and that his pictures, generally ſpeaking, have a monotony of colouring, which makes them pleaſe leſs at firſt ſight, and require reflection to produce their full effect. 'But', ſays he, 'the pictures of Mr. MENGS unite the moſt ſublime expreſſion with the greateſt truth and harmony of colouring, and that happy and judicious management of the different effects of light, which delights the ſenſes at the firſt impreſſion, and pleaſes reaſon on the moſt attentive examination. They are full of that grace which is felt, but cannot be analyſed. The painter of Urbino copied *Nature* in her moſt beautiful forms; but the German artiſt copied, improved, and ennobled *her*. The former ſacrificed only at the ſhrine of Reaſon; the latter at that of Reaſon and the Graces at the ſame time.'—Here we ſuſpect that M. D'AZARA has got into the *ideal*, at leaſt in panegyric, notwithſtanding the illuſtrious merit of the artiſt, whom he contemplates with the *blended* eyes of taſte and friendſhip:—do not read *blinded*.

'MENGS handled the pencil in a manner peculiar to himſelf. He accumulated layers of colours on his pictures, that they might receive and reflect a greater quantity of light (*Is this*

this ſo peculiar?) ; and was ſo nice in this reſpect, that he always prepared his pallet himſelf.' This we believe he had in common with a great number of painters. He had a thorough chemical knowledge of the nature of each colour, and of the effect it muſt produce long after the evaporation of the oil. He was perfectly acquainted with the theory of light, and of its decompoſition by the priſm into ſeven colours; but in practice he admitted only three primitive colours, the yellow, red, and blue, and of theſe he compoſed all his tints.

Our Editor gives a very ſtrong and a very remarkable proof of the ſucceſs with which Mr. MENGS had ſtudied the works of the ancients, when he informs us, that all the technical materials, that enrich the celebrated Abbé WINKELMAN's *Hiſtory of the Arts* (of Painting and Sculpture), were furniſhed by this excellent artiſt.

The Chevalier D'AZARA, after having diſplayed the merit of the *artiſt*, attracts our attention and tender eſteem to the character of the *man*; and here we ſhall follow him with peculiar pleaſure.

Mr. MENGS was naturally timid, and was born with a certain caſt of melancholy, which is a frequent attendant on ſenſibility and genius. This was nouriſhed by the cloſe retirement in which his father made him paſs the early period of his life. It is not therefore ſurpriſing that he knew little of the world, was a ſtranger to the tone and manners of the age, and had in his air and deportment ſomething that ſeemed to announce diffidence and conſtraint. Nevertheleſs he delivered his opinion in matters, relative to the art he profeſſed, with a bold ſincerity that ſeemed ſometimes harſh, and gave offence; but when this happened it always gave him pain upon reflection, and he was not eaſy until he had made amends for it by friendly counſels and kind offices. The purity and ſimplicity of his manners were remarkable; and it was eaſy to obſerve, that his enthuſiaſm for the arts had ſuppreſſed in him every other paſſion. In point of veracity he was ſevere and inflexible; nothing could engage him to depart from ſtrict truth in any inſtance. Among a multitude of proofs that our Editor ſays he could bring of this, he mentions the following incident:—In his laſt journey from Rome to Spain, entering into the French territories at *Pont-de-Beauvoiſin*, the officers of the Cuſtom-houſe found, in his baggage, gold ſnuff-boxes enriched with diamonds, which he had received as preſents from ſeveral princes. They aſked him if theſe boxes were deſigned for ſale, or were only intended for his private uſe. His anſwer was, *I am not a merchant, Gentlemen, and I never take ſnuff.* The officers, highly pleaſed with this frankneſs, were entirely diſpoſed to renounce their ſeizure, and, being deſirous that the honeſt man ſhould keep his boxes, they preſſed him urgently to a general declaration, that he made uſe of them; but all their

intreaties were inſufficient to draw from him the leaſt affirmation of this nature, and he continued to aſſure them that he had never taken a pinch of ſnuff in his life. They were therefore obliged to conſider the ſnuff-boxes as objects of commerce, and to ſeize them as ſuch. And had not our Editor and the Marquis of Liano interpoſed afterwards, and employed, unſolicited, all their credit at Paris in favour of Mr. MENGS, the boxes would never have been returned.

Notwithſtanding that there was frequently ſomething not very pleaſing in the external manners of this worthy man, benignity and generoſity were the predominant lines of his character; and his diſintereſtedneſs went ſo far as to encroach upon the duties he owed to his family; at leaſt, it prevented that prudent œconomy which was neceſſary to ſecure them an eaſy ſubſiſtence after his death. It appeared, in ſettling his accounts, he had received, in the laſt eighteen years of his life, 160,000 crowns (about 40,000 pounds), and yet he left ſcarcely wherewithal to pay the expences of his funeral.

This fortune does not appear very brilliant, when we conſider the reputation of the Chevalier MENGS, and that there was ſcarcely a ſovereign in Europe, who did not employ him. The Empreſs of Ruſſia, who patronizes the arts with an exquiſite taſte, and an almoſt unbounded munificence, ordered two pictures from this great artiſt, and left him the choice of the ſubjects. His death prevented his even beginning them; and the two thouſand crowns that had been advanced to him by the Empreſs as a part of his reward, were generouſly given to his family.

The King of Spain gave the Chevalier MENGS generous marks of his protection and favour during his life, and has, ſince his death, portioned his five daughters, and granted penſions to his two ſons.

M. D'AZARA, after this intereſting account of the *artiſt* and the *man*, gives a catalogue of the productions of his pencil, that are to be ſeen in Spain, or that were executed there. The principal of theſe (beſide ſuch as have been already mentioned) are as follows: The Cieling of the Saloon of Trajan, where the King dines, painted in Freſco, and repreſenting the *Apotheoſis* of that Emperor (who was born in Spain), and the *Virtues* conducting him to the *Temple of Fame*.—Two pictures, which decorate the bed-chamber of Charles III. in the palace at Madrid, one repreſenting the *Conception*, and the other *St. Anthony of Padua*, which have ſo hit the royal taſte, that his Majeſty has them always carried about with him, when he changes his place of reſidence. —A Crucifixion.—The Cieling of the Theatre of Aranjuez, in the centre of which MENGS has repreſented *Time*, *incenſed*, *carrying off Pleaſure*; the reſt of the Cieling exhibits Caryatides in

claro-

claro-obſcuro.—A fine Magdalene in the palace of St. Ildephonſo.—A Madona, with the child Jeſus and Joſeph, which belongs to the Prince of Aſturias, and is greatly eſteemed by that Prince, who is known to be a connoiſſeur, particularly in *head-drapery*.—The principal picture in the church of *St. Iſidore* at Madrid, repreſenting the *Holy Trinity*, with the *Virgin* and ſome Spaniſh Saints.—An *Ecce Homo*.—A *Mater Doloroſa*, probably in the ſtile of Pergoleſi.—A Portrait of Charles III.; and a Portrait of Catherine II., Empreſs of Ruſſia, which is an allegorical compoſition, enriched with a variety of figures.—Theſe are the principal pieces of Mr. MENGS that are mentioned in the liſt of the Chevalier D'AZARA; but many other firſt-rate performances have immortalized his pencil: The Saloon of the *Muſæum Clementinum* at Rome, which he painted in Freſco.—The *Perſeus and Andromeda*, which he painted for an Engliſh nobleman, and which, captured in its paſſage by a French privateer, became the property of M. de Sartine.—The Greek female Dancer, large as life, painted in *crayons*, on wood, for the Marquis Croimare at Paris; and the Apollo, in the midſt of the Muſes, in the villa Albano, in compariſon with which (ſays an excellent judge) the Apollo in the *Aurora* of Guido is but a mortal. All theſe are capital pictures, and will preſerve the name of this admirable artiſt from oblivion.

*** *This valuable publication of the* WORKS *and* LIFE *of the Chevalier* MENGS, *in* 2 Vols. 4to. *may be had of the Importer*, Mr. Molini, *in Woodſtock-ſtreet, at One Guinea in Sheets.*

4to 2 Vols

ART. VII.

Bibliotheca Arabico-Hiſpana Eſcurialenſis, &c. i. e. The Arabic Library of the Eſcurial; or a *Deſcriptive* Catalogue of all the Manuſcript Works compoſed in Arabic, by Arabico-Spaniſh Authors, which are contained in the Monaſtery of the Eſcurial. Drawn up by Don MICHEL CASIRIO, a Syrian-Maronite Prieſt, Librarian to his Majeſty Charles III. King of Spain, and Interpreter of Oriental Languages. Publiſhed by the King's order, at Madrid, in 2 vols. Folio.

WE learn from the inſtructive preface, which is prefixed to this great work, that Philip II., when he founded the monaſtery of the Eſcurial, was deſirous of enriching it with the moſt valuable manuſcripts of all kinds, and in all languages; and this ſhews, that all the ſparks of humanity were not extinguiſhed in this hideous monarch. Several learned men, more eſpecially *Arias Montanus*, and *Hurtado de Mendoza*, were charged with the execution of the King's deſign. While they collected manuſcripts for the King, they reſerved ſeveral for themſelves,

ſelves, which, after their deceaſe, were added to the royal collection.

Under the reign of Philip III., *Pietro de Laſa*, being on a cruize near Salé, took two veſſels, where, among other effects belonging to *Zeidan* King of Morocco, he found 3000 manuſcripts, on political, philoſophical, and medical ſubjects, as alſo on the true ſenſe and interpretation of the *Koran*. This was a new and valuable acquiſition for the library of the Eſcurial; but, on the 7th of June 1671, a fire unhappily broke out, which conſumed a great part of theſe manuſcripts, ſo that there remained only about 1805, which eſcaped the flames. The catalogues of the contents of this famous collection, that had been drawn up by Arias Montanus, the firſt librarian, by F. Joſeph de Siguenza, his ſucceſſor, and by David Colvil, a learned Scotſman, were conſumed by this fire. The accounts we have had, ſince that fatal event, of this famous collection, are very imperfect; they are contained in two catalogues; one of which is in Arabic and Latin, and gives the titles of the manuſcripts; the other, which is only in Latin, mentions 419 only. Don Casirio undertook the learned catalogue, now under conſideration, ſo long ago as the year 1753.

He divides all theſe manuſcripts into thirteen claſſes: Rhetoric, Poetry, Philology, Miſcellanies, Lexicons, Philoſophy, Politics, Medicine, Natural Hiſtory, Juriſprudence, Theology, Geography, and Hiſtory: He places at the ſide of the Arabian titles a Latin tranſlation of them: He copies the beginning and the concluſion of each work: He informs us of the birth, country, morals, profeſſion, employments, and rank of the reſpective authors, of the time when they wrote, the date of their death, and the degree of eſteem in which their writings are held by the Mahometans.

Under the reigns of Almanzor and Almaimon, the Arabians applied themſelves, with great ſucceſs, to the ſtudy of philoſophy, mathematics, medicine, and natural hiſtory. They tranſlated, into their language, the moſt valuable writings of the Greeks, Syrians, Perſians, Egyptians, and Indians, of which the originals are, for the moſt part, loſt: Such are, the fifth, ſixth, and ſeventh books of the Conic Sections of Apollonius of Pergæa, that were preſerved in the library of the *Medicis*, and tranſlated from Arabic into Latin, with a commentary by Abraham Echellenſis. Such alſo are the 2d, 3d, 4th, 5th, 6th, 7th, and 8th books of the Commentary of Galen, on the 2d and 6th books of the *Epidemics* of Hippocrates, which is only to be found in the library of the Eſcurial.

Art. VIII.

Anecdota Græca, e Regia Pariſienſi et e Veneta S. Marci, Bibliothecis deprompta, edidit Johannis Bap. Caſp. d'Anſe de Villoiſon. i. e. *Grecian Anecdotes* (or rather Miſcellanies) taken from the Libraries of the King of France at Paris, and that of St. Mark at Venice, and publiſhed by M. John Baptist Caspar d'Anse de Villoison, Member of the Academy of Inſcriptions at Paris. 2 vols. 4to. Venice. 1781.

We mentioned, in one of the preceding Articles of this Appendix, the ardor and aſſiduity with which this learned man has been ſearching after the hidden treaſures of Grecian literature, in the library of St. Mark, theſe three or four years paſt. Here we have the firſt fruits of his labours, which ſhew that he is as ready to communicate as he is ardent to acquire. The firſt volume of this collection contains a work of Eudocia, Empreſs of Conſtantinople, in the eleventh century, now publiſhed, for the firſt time, entitled, Ἰωνιὰ, or *Violarium*, and containing, in an alphabetical order, an account of all the Gods, Goddeſſes, Heroes, Heroines, Philoſophers, Artiſts, &c. As this work is partly drawn from the ſame ſources from whence Suidas derived his materials, it will no doubt contribute to the emendation of that author; and as it contains ſeveral things either new, or, at leaſt, hitherto too little known, it will certainly excite the curioſity of the philologiſts. It contains 442 pages, and is publiſhed without either a tranſlation or notes. The *ſecond volume* is miſcellaneous. It conſiſts, among others, of the following pieces: An accurate Deſcription of the Ῥοδωνιὰ, or Anthology of Macarius Chryſocephalus, from the library of St. Mark, in which we find ſentences and fragments of Syneſius, D. Chryſoſtom, Plutarch, Ariſtides, Herodian, the Orator Æſchines, Lucian, Demoſthenes, Libanius, and Choricius.—An Oration of Procopius of Gaza, from the library of St. Mark.—A Notice of Extracts that are found in Macarius, from Xenophon, Stobæus, Joſephus, Euſebius, Nicephorus, Chummus, Germanus, Conſt. Manaſſes, Pindar, Homer, Theocritus, Lucian, Heſiod, Ariſtophanes, &c.—A Treatiſe *de Atticiſmis.*—*Heliæ Monachi, περὶ τῶν ἐν τοῖς ϛίχοις παθῶν.*—*Herodiani Varii libelli Grammatici.*—*Dionyſii Thracis Grammatica, cum codice Scripta collata.*—Scholia Inedita in Dionyſii Grammaticam; and Extracts from the Commentary of Diomede the Scholaſtic on that Work.—But the two moſt valuable pieces in this volume are, The *Third Book of Iamblichus concerning the Doctrine of Pythagoras*; and *Two Diſſertations of Plotinus.*

ART. IX.

Aſtronomie. i. e. A Treatiſe of Aſtronomy. By M. DE LA LANDE, Member of the Royal Academy of Sciences at Paris. Vol. IV. Paris. 1781.

THE three preceding volumes of this work were publiſhed about ten years ago, and it has been generally eſteemed one of the moſt complete and learned ſyſtems of aſtronomy that hath appeared. The volume before us contains an ample *Treatiſe on the Ebb and Flow of the Sea—A Memoir concerning the Origin of the Conſtellations and the Illuſtration of* Mythology, *by the Means of Aſtronomy.* By M. DUPUIS, Profeſſor in the Univerſity of Paris. And *Supplements* to the preceding Volumes by M. DE LA LANDE. Theſe Additions to this valuable Work deſerve more than a ſimple enumeration.

The Tides have been long an object of ſurpriſe and inveſtigation; and M. DE LA LANDE begins his Treatiſe with a hiſtory of the opinions of the Ancient Philoſophers concerning this phenomenon. We do not think the paſſage of *Quintus Curtius*, relative to the aſtoniſhment which filled the ſoldiers of Alexander, in their paſſage to India, when they ſaw the ſea overflowing the coaſts, and afterwards leaving their veſſels in the mud,—a ſufficient reaſon for affirming that the people of Greece were ignorant of the phenomenon of the tides. The paſſage, which he himſelf quotes from the *Timæus* of Plato, may be alleged as a proof of the contrary. In that paſſage an attempt is made to explain this phenomenon by the impreſſion which the waters of the Atlantic receive from the rivers that fall into the ocean from the Celtic mountains, and the re-action that is the conſequence of this impreſſion. However unſatisfactory this explication may be, it ſhews that the phenomenon of the tides was known in Greece, and was moreover an object of inveſtigation and reſearch. The notion of the Stoics on this ſubject, as recorded by *Solinus* and *Apollonius*, is too childiſh and abſurd to deſerve mention. Others, among the ancients, conſidered the tides as ebullitions, occaſioned by ſubterraneous fires, or as effects of winds and exhalations, or as the conſequence of a rarefaction produced by the beams of the moon, or as proceeding from the interruption of the ſeas by the continents; in ſhort, the hypotheſes were various on this head, and they were all inſufficient to account for the appearances. Nevertheleſs, as our Author obſerves, ſeveral of the ancients, and, among others, *Pliny*, *Ptolemy*, and *Macrobius*, were acquainted with the influence of the ſun and moon upon the tides; and Pliny ſays expreſsly, that the cauſe of the ebb and flow is in the ſun, which attracts the waters of the ocean; and adds, that the waters riſe in proportion to the proximity of the moon to the earth.

From the ancients our Author proeeeds to the moderns who preceded Sir *Iſaac Newton* in this inveſtigation. He mentions and confutes, in a few words, the hypotheſes of Galileo and Des Cartes, and fixes his attention on *lunar attraction*, as the only explication that accounts for the phenomenon in queſtion. The great Engliſh philoſopher now mentioned, proved that the ebb and flow was the effect of univerſal attraction, and *Halley* was the firſt who drew from this principle an ample theory of the tides.

But as the problem of the tides was ſuſceptible of a profound analyſis, and the reſearches of Sir Iſaac Newton admitted of, and even required a farther developement, the Royal Academy of Sciences at Paris propoſed this problem as the ſubject of a prize, for which the three greateſt geometricians in Europe contended. Theſe were Meſſrs. *Euler*, *D. Bernoulli*, and *Colin M'Laurin*, who were all crowned and divided the prize. After giving an analyſis of their diſſertations, our Author takes notice of the new light which M. *d'Alembert* caſt upon this ſubject by his excellent reflections on the ebb and flow of the ſea, in his Memoir *concerning the general cauſe of the Winds*, which was crowned by the Academy of Berlin in the year 1746; and in which that celebrated philoſopher conſiders the attractive influence of the moon and of the ſun on the maſs of the air, and expoſes *Bernoulli*'s miſtake in ſuppoſing, in the equation he gave for the elevation of the waters, the earth compoſed of layers of different denſities.

M. De la Lande ſuppoſes, with Newton and D. Bernoulli, that the ſea aſſumes an elliptical figure, anſwers the objections that the Carteſians have made to this figure, eſtimates the elevation of the tides under the equator, on the ſuppoſition that the earth is a homogeneous ſpheroid, explains the reaſons of the high tides at St. Malo, and conſiders largely the principal phenomena of the ebb and flow of the ocean. After having moreover pointed out the effect of the perigee of the moon, her forces in the different points of her orbit, M. Bouger's rule for finding the tides, relatively to the diſtances of the moon, the effects of the diſtances of the ſun, the differences of the ſolſtices at different heights and hours, our Author examines this queſtion, Whether the tides of the equinoxes are always the higheſt? and proves, that the affirmative takes place only in certain caſes. He afterwards treats of the tides in narrow ſeas, and particularly in the Mediterranean, of the extraordinary motion of the ſea, of the tides in the rivers, &c. This is followed by an account of the obſervations that have been made relative to the tides in different parts of the globe, and by tables of the hours and heights of the tides in theſe parts.

The aſtronomical reader muſt conſult the Treatiſe itſelf, to form a juſt notion of its contents, which are highly inſtructive,

but not every where beyond the reach of philoſophical criticiſm.

The Memoir of M. DUPUIS is doubtleſs a maſterly performance. It diſcovers deep inveſtigation, ingenious conjecture, and a rich fund of erudition, accompanied with ſagacity, judgment, and genius. According to the hypotheſis of this learned man, the origin of the conſtellations is derived from the Egyptians. That people, by reducing to claſſes the different cluſters of ſtars in our zodiac, deſigned to form, for their own uſe, not only an aſtronomical, but alſo a rural kalendar. They conſequently conſidered the ſigns of the zodiac as ſymbols of the courſe and effects of the ſun; and they connected theſe ſymbols with the different ſeaſons of the year in ſuch a manner, that they announced to the huſbandman the labours of the field, and the times of expecting the fruits of his induſtry. The times of ploughing and reaping, ſays Mr. D. are the two important periods of the rural year, and therefore muſt have been repreſented by a *particular* hieroglyphic of ſuch a kind, as that its ſignification ſhould be clear and palpable to the moſt ignorant ſpectator. The bull or ox was the plaineſt ſymbol of tillage; a *virgin* holding an ear of corn was well adapted to repreſent the months of harveſt; and accordingly we find theſe two ſymbols in the zodiac. It appears then, that our zodiac contains, in fact, what it was natural to expect in the hieroglyphical kalendar of a people addicted to aſtronomy and agriculture, that the ſtate of the heavens and the earth, in their moſt intereſting periods, was indicated there in ſuch a palpable manner, as to prevent the poſſibility of miſtaking it, and that the other ſymbolical characters of the zodiac have, moſt probably, a ſignification relative to the ſtate of nature in the climate of the people who invented the kalendar.

Our Author proves, that the Egyptians were the inventors of the aſtronomical kalendar, notwithſtanding any appearances to the contrary, proceeding from the changes that may have taken place in the climate and ſoil of that country. He then examines the opinions of ſeveral learned men, and, among others, the hypotheſis of M. *Bailli*, relative to the additions or alterations which have been made in the aſtronomical kalendar by other nations; and all his diſcuſſions terminate in attributing the invention of this kalendar to the Egyptians. He even thinks that aſtronomy had its birth in Egypt, and that all the nations, who had any acquaintance with this ſcience, derived their knowledge of it either directly from the Egyptians, or from other nations who had been inſtructed by them. The univerſality of the names of the twelve ſigns of the zodiac, which are the ſame in Egypt, India, Perſia, Phenicia, Greece, and Italy, ſhews them to have been derived from one common ſource.

The

The ancient fables, according to our author, contain nothing more than a phyſico-aſtronomical theory relative to the aſpects of the heavens, and the agents in the natural world. He explains and illuſtrates the monuments, the ſimple and compound ſymbols of the deities, and the fables of antiquity, by the theory of the riſings and ſettings of the ſtars, the paſſage of the ſun through the different conſtellations, and, above all, by the preſſion of the equinoxes, which, diſplacing every thing, and changing the aſpects of the heavens, muſt have varied the alluſions and ſymbols, multiplied the *genii*, and changed the characters of hieroglyphical writing. This is giving us a new key to open the myſteries of mythology; and whether it opens really, or only appears to open, it is moſt learnedly deſcribed, and moſt ingeniouſly employed.

His conſidering the mythological parts of epic and didactic poems as broken morſels of the kalendar, opens a new field of interpretation. In order (ſays he) to decompoſe a fable, and find out its principle, we have only to take a globe, rectify it to the latitude of the country where the fable appears to have been invented, fix the equinoctial point to the place of the zodiac where it muſt have been at that time, obſerve at the horizon what ſtars, by their riſing or ſetting, indicated at night or morning the entrance of the ſun into each ſign, particularly thoſe which marked the equinoxes and ſolſtices, and combine their aſpects with the motion of the ſun or the moon. This, continues M. Dupuis, is preciſely the method recommended by the Egyptian prieſts themſelves, who ſaid, that all the fables were formed on the motion of the ſun and moon, the twelve ſigns of the zodiac, and the ſtars that are in aſpect with them. We ſhall ſhew how our author employs this method in analyſing and explaining the *Labours of Hercules*. He thinks his ſucceſs here will confirm the excellence of this aſtronomical key, and ſhew at the ſame time the manner of uſing it.—Be not ſurpriſed, reader,—hear him;—we ſhall let him ſpeak for himſelf.

'Hercules was worſhipped in Egypt and Phenicia: the globe muſt, therefore, be placed according to the latitude of theſe climates. As the *Phenician* Hercules is the moſt famous, it will be proper to chuſe this latitude, *i. e.* we ſhall elevate the pole to 32 degrees, or thereabouts. This *genius* (Hercules) had at Tyre a temple, as ancient as that city, and which was erected 2300 years before the age of Herodotus, as that hiſtorian himſelf aſſures us: this places the vernal equinox in the firſt degrees of *Taurus*, and conſequently the ſummer ſolſtice in the firſt degrees of *Leo*; the one an equinoctial, and the other a ſolſtitial ſign, in what we call the fabulous ages. After having determined the latitude of the place, where the fables relating to Hercules

were invented, and the poſition of the equinoxes and ſolſtices at that period, let us enquire what conſtellations announced, by their riſing or ſetting, firſt the commencement of the year, and afterwards each of the months ſucceſſively. If we find that the *celeſtial* Hercules marked, by his riſing or ſetting, the departure of the ſun in his annual courſe, and that the paſſage of the ſun, and of the *genius* (Hercules) that ſeemed to conduct his chariot, was announced by conſtellations repreſented by the ſame kind of animals with thoſe over which the terreſtrial Hercules is ſaid to have triumphed, and placed in an order ſimilar to that of his famous *labours*, it is manifeſt that the ſtory of the *Twelve Labours* is one of thoſe fables, which the Egyptian prieſts tell us were derived from the twelve ſigns of the zodiac and the ſtars, *cum his in conſpectum venientes*. Now, that this is the caſe, we ſhall ſee immediately. We ſhall employ (it is our author that ſpeaks) no effort of fancy to create the hero, or the monſters he ſubdued, or the ſucceſſion of his triumphs. The ſphere will furniſh us with all that we want; even etymology, that *fallacious* guide, is uſeleſs here. The globe, and an obſervation of the ſucceſſive riſings and ſettings of the ſtars, when the ſun enters upon each ſign, are ſufficient.'

Our author ſuppoſes that the commencement of the year, and the ſetting out of the ſun and his *genius* (Hercules), were fixed at the ſummer ſolſtice: he proves, with his uſual erudition, that there is nothing improbable in this ſuppoſition; and he continues thus: 'Let us then place the ſun in the firſt degrees of the Lion (*Leo*), or at the ſolſtitial point, and ſink this point about 15 degrees below the horizon eaſtward, that the twilight may be weak enough to render viſible ſtars of the ſecond magnitude; then let us examine what conſtellations, at their ſetting or riſing, might fix, in the morning, the ſolſtitial point, and the departure of the ſun for his annual courſe. The reſult of this enquiry will be, that for ſeveral years the ſetting of the ſtars of the *celeſtial Hercules* anſwered perfectly well this purpoſe. This conſtellation was therefore connected with the ſun as *firſt genius*, or as ſuppoſed to direct his courſe, and preſide over his motions. Hence ſeveral ancient authors have confounded *Hercules* with the *ſun*; though there is a great difference between the ſun and the ſolar genius, or ſtar which fixes his departure, and marks the moſt important period of his motion. This diſtinction is neceſſary to the explication of the ſolar fables. It is true, the honour of the *Labours of the Sun* was attributed to the *genius* that announced his courſe at his ſetting out. The ancients, however, have made a diſtinction; and ſome authors tell us, that Hercules is the *Intelligence* that conducts

conducts the ſun, and ſeems to travel with him in the zodiac *.'

In applying all this to the *Labours of Hercules*, our author ſhews a ſpirit of arrangement, and a knack of exhibiting conformities, that all the preceding *hierophants* of mythology will behold with reſpect, if not with envy. It would be a rude taſk for us to follow our literary Hercules in his explication of the *Twelve Labours* of the ancient one: we ſhall therefore confine ourſelves to the two firſt. Theſe will afford a ſufficient ſpecimen of M. DUPUIS's abilities; and the *ſecond labour*, more eſpecially, will diſcover the moſt ingenious efforts of (what ſhall we call it?) fancy or inveſtigation, that we have met with of a long time.

Firſt Labour.

The firſt animal which the ſun meets with at the entrance on his courſe (from the ſolſtitial point) is *Leo*, the famous Nemæan lion of antiquity. The paſſage of the ſun, through this ſign, is a kind of triumph over this monſter, and he is indebted for it to Hercules, as the conducting *genius* who directs his motion. This, then, is the firſt conqueſt; and it is, accordingly, this which mythology places at the head of the labours of Hercules, who wore all his life the ſkin of the animal, and uſed it as a buckler in all his combats. Our author employs an abundance of erudition to ſhew the fallacy of thoſe explications of the ancient traditions, which induced many to believe that the Nemæan lion had a real exiſtence upon earth, and that it was by vanquiſhing this monſter that Hercules obtained a place in the firmament. Among other things he obſerves, that the ſign of *Leo* was known by the Egyptians, Perſians, and Indians many ages before the Grecian Hercules, the pretended ſon of Alcmena, is ſuppoſed to have lived. This hero, according to the received chronology, muſt have lived, at moſt, but about 1300 years before the Chriſtian Æra; but the fables here explained, ſuppoſe that the lion was a ſolſtitial ſign, and conſequently carry us back to the year 2500 before Chriſt. Again, if the ſymbol in queſtion had been a monument of the victory of the pretended Grecian hero, the aſteriſms, which bear the denomination of *leo*, or the lion, muſt have been denoted by another emblem, and muſt have borne another name, before the birth of the ſon of Alcmena. But we find this aſtronomical ſymbol among the moſt ancient Egyptian monuments: we find it in the Zodiac of the Indians; and its name is given to one of the twelve ſigns by the ancient Perſians.

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* *Ægyptii fabulantur Herculem in ſole poſitum una cum illo circumferri.* Plutarch. de Iſid. et Oſir.

Second

Second Labour.

The explication of this Second Labour, which anſwers to the ſign of *Virgo*, and is the triumph of Hercules over the Lernæan Hydra, is ſtill more ingenious. This fabulous Hydra had one body and a hundred necks, each terminated by the head of a ſerpent. When one of theſe heads was cut off, another ſprouted in its place. It was, according to the fable, by the aſſiſtance of *fire*, that Hercules ſubdued this monſter.——Now for the explication,—nearly in our Author's own words.

'The ſun, after having paſſed through the ſtars of the *Lion*, arrives at the ſign of the *Virgin*. His entrance into this latter ſign was marked by the ſetting (or rather occultation, we think) of the laſt ſtars of the celeſtial Hydra, which diſappeared at the approach of the ſolar beams, or *fire*. Here then we have the aſtronomical phenomenon, which was deſigned to be celebrated and ſung in the ſecond triumph of Hercules, who, by the aſſiſtance of *fire*, killed the Lernæan Hydra. The heliac ſetting of that conſtellation was ſlow and ſucceſſive. The ſtars, in the head of the hydra, began to diſappear, when the ſun had proceeded towards the middle of the conſtellation of *Gemini* or the Twins; and it was neceſſary that the ſun ſhould paſs through *Cancer*, *Leo*, and arrive at *Virgo*, before the laſt ſtars of the tail ſet, or the occultation of that long conſtellation was entirely completed. Add to this another conſideration—that when the ſun came near to *Leo*, the ſtars, in the head of the *Hydra*, roſe with a heliac appearance, and diſengaged themſelves from the ſolar rays with the ſign of *cancer*; ſo that the head was reſtored while the ſtars of the body were ſucceſſively diſappearing, and thoſe of the tail were ſtill viſible above the horrizon. This ſingular circumſtance of the apparition of the firſt ſtars, before the ſetting or ocultation of the laſt, ſeemed to render the victory of the ſun impoſſible; and ſo, in fact, was the matter conſidered. However, in one ſenſe, he had really conquered, when all the ſtars had ſet heliacally, and had all ſucceſſively diſappeared; and this happened in the ſecond month, in *Virgo*, the ſign to which this ſecond *Labour* correſponds. As the re-production of the head, or the heliac riſing of the ſtars of the firſt hydra, which ſeemed to raiſe it from its aſhes, always accompanied the heliac riſing of the ſign of *cancer*, under which it is placed; the fable ſays, that the Grecian hero was particularly moleſted in the combat by a crab, which pricked him in the foot, and that this crab was placed among the twelve ſigns of the Zodiac. The ſame honour was conferred upon the Hydra of Hercules, or that which is placed among our conſtellations.'

Theſe *two Labours* will ſerve as a ſpecimen of our Author's manner of explaining the ancient fables, and of his ingenious application of aſtronomical ſcience to this object. The other

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ten Labours are explained by the ſame method, and on the ſame principles. M. DUPUIS acknowledges that the application of aſtronomy to this purpoſe is not a new idea; he obſerves, however, that it was never demonſtrated before he took it up. It is mentioned, by the ſcholiaſt on Heſiod, and Euſebius in his *Præparatio Evang.* Book III. chap. 11. expreſſes himſelf in the following manner, *Solem Heraclea aut Herculem appellarunt, quem etiam duodecim certaminum labore defunctum eſſe fabulantur, cœleſtis orbis in duodecim ſigna diviſionem ſymbolo hoc declarare cupientes.* This relation of the labours of Hercules to the ſigns of the Zodiac, was placed among the other hypothetical conjectures of the ancients concerning the fabulous or allegorical hiſtory of that hero; but it was reſerved for our Author to prove the point by aſtronomical principles; with this difference, however, that the ancients attributed to the ſun, what he attributes to *his genius*, or to the *intelligence* that was ſuppoſed to accompany and direct his courſe.

So then Hercules, the *laborious* Hercules, is reduced to a conſtellation, and was ſung and celebrated as ſuch above 2000 years before Herodotus, and more than 1200 before the period in which the ſon of Alcmena is ſuppoſed to have lived.

This Memoir of M. DUPUIS is followed by the *ſupplements*, which the progreſs of aſtronomy, daily enriched with new obſervations and curious reſearches, has induced M. DE LA LANDE to add to his work publiſhed in 1771, in order to render it ſtill more complete. He obſerves juſtly, that a treatiſe of aſtronomy, which contained an accurate account of that ſcience, as far as it had advanced in the year 1771, might, at the end of ten years more, betray into miſtakes thoſe who ſhould confide in it with ſecurity, as comprehending the preſent ſtate of aſtronomical ſcience. And, as the recent improvements that are diſperſed in a multitude of journals, academical memoirs, and particular works, are collected here, theſe ſupplements will be well received.

ART. X.

Cours complet d'Agriculture Theorique, Pratique, Oeconomique, &c. *i. e.* A complete Courſe of Theoretical, Practical, and Œconomical Agriculture, and of rural and *veterinarian* Medicine; or a Univerſal Dictionary of Agriculture, followed by a Method of ſtudying Agriculture by ſcientific Principles. By a Society of Huſbandmen, and digeſted by the ABBE ROZIER. Vol. I. 4to. Paris. 1781.

THE name of the Abbé ROZIER will naturally raiſe the expectations of the Public pretty high with reſpect to the merit of this work; and, if we may judge by the volume before

fore us, theſe expectations will not be diſappointed. There is a common defect among the writers on gardening and the different parts of agriculture, that they always ſpeak of the diſtrict or province they inhabit, as if the method obſerved there was practicable and adviſeable every where elſe. Our Author or Compiler has avoided this, as far as was poſſible, and has taken great pains to render this work of univerſal utility, by ſhewing how the Georgical precepts in each article may be modified, and accommodated to different ſoils and circumſtances. Each article in this firſt volume is a complete treatiſe upon its ſubject. The articles *Abeille*, *Agriculture*, *Air*, and *Amendement*, are the moſt important, and deſerve to be peruſed with particular attention.

ART. XI.

Verhandeling van het Bataviaach Genootſchap des Conſten en *Wetenſchappen*, &c. *i e.* Memoirs of the Society of Arts and Sciences of Batavia. Vol. I. Printed at Batavia. Large Octavo. 1779.

A *Society of arts and ſciences* in the iſland of Java is certainly a new phenomenon that muſt naturally excite an agreeable ſurprize. The communication of the European nations with the Eaſt Indies has not hitherto enriched the annals of hiſtory with many relations honourable to humanity. Gain, plunder, deſpotiſm, wars, artifice, and injuſtice, make up more than two-thirds of the hiſtory of the European ſettlements in India; and, if we except ſome improvements in aſtronomy, and natural hiſtory, it may be affirmed, that *navigation*, which has been the means of our connection with theſe diſtant regions, has been little better to humanity than a ſecond box of *Pandora*, with ſome feeble *hopes*, perhaps, left at the bottom. However that be, we are glad to ſee a literary ſociety erected at Batavia; whether or not it will contribute to enlighten the Indians, we cannot tell, but it will naturally produce good effects in various ways. It will, at leaſt, dignify the paltry aſpect of *mere* commerce, which, when undignified with morals, taſte and knowledge, is a very ſorry buſineſs, though in a *certain degree* it may be neceſſary to give us conveniently, meat, drink, and clothing.

The ſociety under conſideration was founded at Batavia under the adminiſtration of the late Governor General DE KLERK, and has great obligations to its preſident Mr. RADERMACHER, who has generouſly furniſhed it with a valuable library, and a great variety of mathematical inſtruments. The end propoſed by its founders, is to encourage the arts and the branches of induſtry that may be of the greateſt utility in that part of the globe; and all the ſubjects and queſtions, to which the ſociety have annexed prizes, are conformable to this purpoſe,

poſe, and are relative principally to manufactures, agriculture, all the branches of medicine, and partly to belles lettres, hiſtory, and the antiquities of India. Beſides theſe diſcourſes, there are *memoirs* compoſed by the members of the ſociety. Thoſe contained in the volume before us are as follows:

I. *An accurate Account of the Poſſeſſions of the Dutch Eaſt India Company, together with a Deſcription of the Kingdom of Jaccatra, and of the City of Batavia.* By Meſſrs. RADERMACHER and HOGENDORP. The facts contained in this Memoir are to be found, with very few exceptions, in the *General Hiſtory of Voyages*, publiſhed formerly at the Hague, and at Paris, and whoſe enormous and ill-digeſted maſs was lately reduced to twenty volumes, in large 8vo. by M. DE LA HARPE, whoſe elegant abridgment was mentioned in a former Review. They are alſo to be found in the Abbé RAYNAL's *Philoſophical and Political Hiſtory*. But the Authors of the Memoir before us are more worthy of credit than either of theſe writers, as they are nearer the ſources of information, not to mention other reaſons known to us.

II. Reſearches concerning the Nature of the Small Pox at Batavia, *together with Obſervations on Inoculation, as it has been practiſed in that City.* By M. VAN DER STEEG. It appears from this Memoir, that the ſmall-pox which attacks the Europeans in that warm climate with leſs malignity than in their native land, makes dreadful havock among the ſlaves and the natives at Batavia. This M. VAN DER STEEG attributes partly to the manner of treating the diſorder uſual among theſe latter, who, during the fever that accompanies the variolous eruption, make uſe of heating diet and medicines, and plunge themſelves in cold water in the hotteſt fits, but principally to the denſity and calloſity of the cuticle or *epidermis* of this claſs of perſons. Inoculation appears to have met with much oppoſition to its progreſs in the Iſle of Java, whoſe inhabitants are not more free from narrow prejudices in this reſpect, than many of our *enlightened* European cities and provinces, who, in enumerating the victims of this dreadful malady, do not ſeem poſſeſſed of arithmetic enough to know the difference between one among eight, and one among a hundred; and who are afraid of offending *God*, by performing ſalutary acts of beneficence to *man*. For the reſt, the Author of this Memoir ſeems to be a generous and intelligent operator, as well as a ſucceſsful one, and, by his diſintereſted proceedings, has given a progreſſive motion to the cauſe of inoculation.

III. *Concerning the different Methods of calculating Time, that are employed in different Parts of Aſia, together with a Compariſon of their Reſults, for the Years* 1779 *and* 1780. By M. RADERMACHER. This Diſquiſition is accurate, and may be uſeful;

uſeful; but it is not ſuſceptible of abridgment. It is concluded by an obſervation that deſerves notice. It relates to the very imperfect manner of reckoning which is employed by the *Chineſe*, and the *Gentoos*, whoſe intercalations are irregular, and whoſe year is compoſed ſometimes of 354, and at other times of 384 days, and is thus founded on no fixed aſtronomical principles. It is no wonder, therefore, as M. RADERMACHER juſtly obſerves, that theſe two nations carry up their chronology beyond the flood, ſince their defective manner of reckoning muſt naturally expoſe them to the moſt extravagant errors.

IV. *The Commencement of a Javaneſe Hiſtory, entitled,* Sadjara Radja Djawa, *with a Preface.* By M. VAN IPEREN. This is a fable that ſeems to belong to the ſacred hiſtory of the Javaneſe. But we cannot make much out of it, as we do not ſee the end of it; and if we did, perhaps we ſhould not be much wiſer. There are paſſages in it that carry ſome diſtant ſimilitude to incidents and paſſages in the Moſaic hiſtory, and to the circumſtances of initiation into the Egyptian myſteries; but theſe affinities are too feeble to admit of any concluſions of conſequence to the illuſtration of ſacred philology.

V. *A Diſſertation on the preſent State of Agriculture in the Country about Batavia.* By JOHN HOOYMAN. This Writer is really eloquent, but not laconic; he is, however, well-informed and inſtructive, and his Memoir ſeems to exhibit a very accurate, judicious, and intereſting account of the ſubject he treats. It contains eighty-nine pages, and of theſe, ſeventy-four are employed in an ample deſcription of the ſugar plantations and mills, in which the natural hiſtorian, the manufacturer, and the merchant will find both curious and uſeful information. Our Author propoſes continuing the ſubject in the ſecond volume. In that now before us, he begins by an eulogy of agriculture, well compoſed, and happily expreſſed. He ſhews, that zeal for its improvement was the character of ancient ſtates and kingdoms in the true periods of their grandeur; and that the Dutch have done more to encourage and propagate it in their colonies, than any other nation. He does not deign to compare the Dutch improvements in the iſland of Java, with thoſe that are obſervable in the meagre colonies of the French and Danes; but he compares them with the rural improvements and œconomy that are carried on at *Bombay*, *Madras*, *Calcutta*, and other parts of the Britiſh empire in India, and aſſerts their ſuperiority. He gives the Abbé Raynal a rap on the knuckles for his account of Batavia; obſerving, however, that a man muſt be on the ſpot, in order to give an accurate deſcription of that city and the adjacent country. The Chineſe, who traded in ſeveral parts of India, before the diſcoveries of the Portugueze, and the ſettlement of the Dutch in that country, were numerous in the Iſle

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of Java, before the arrival of the latter there. They were alſo active and induſtrious; and our Author gives an account of the progreſs that was made in agriculture in that ſettlement from their time to the preſent.

VI. *A Deſcription of the Iſland of Timor, as far as it is hitherto known.* By M. W. VAN HOGENDORP. The Academician divides this iſland into four diſtricts, thoſe of the Hollanders,—the black or inland Portugueze,—the white or European Portugueze,—and the original natives, who have no dependance but on their own kings. After an hiſtorical account of theſe different nations, he treats of the nature of the climate, the rivers, the gold and copper mines (which are not worked, from a ſuperſtitious notion, that their treaſures are the property of certain ſubterraneous inhabitants); the trees, plants, and pearls, that form objects of commerce in that iſland; the complexion, character, clothing, and nouriſhment (which is very poor) of the ignorant and lazy inhabitants; the fruits that grow in the country; the tobacco and indigo which it produces in large quantities; and animals and inſects, among which ſerpents, ſcorpions, and poiſonous flies are very numerous.

VII. *A Deſcription of a white Negro in the Iſland of Bali.* By M. VAN IPEREN. This is a curious piece for the lovers of natural hiſtory; it overturns the hypotheſis of certain authors, who think that the white-negro forms a diſtinct and permanent ſpecies, for the man animal in queſtion was born of black parents. He is married and loves his wife. His breaſt reſembles that of a woman: the lower part of his body is covered with hair, his feet excepted; and his head is almoſt hid under a load of hair, whoſe colour is a mixture of white and red of a yellowiſh hue.

All things conſidered, this firſt Volume is a proof of the merit, and an omen of the future ſucceſs of the Batavian ſociety, which conſiſts of 192 members; of this number 103, beſides the 16 directors, reſide in Batavia. Their undertaking is intitled to the applauſe of all who have a zeal for the progreſs and improvement of knowledge, in the dark corners of our globe; and we hope the return of peaceful times will contribute to the ſucceſs of their generous efforts.

ART. XII.

Journal d'un Voyage fait en 1775 *et* 1776, *dans les Païs Meridionaux de l'Europe.* i. e. The Journal of Travels through the Southern Countries of Europe. By the late M. JOHN GEORGE SULZER. 8vo. Hague. 1781.

WHATEVER bears the name of this excellent philoſopher, this good man, has a claim to the attention

of thoſe who are acquainted with his eminent merit. Even this Journal of a Voyage, undertaken for the recovery of his health, during which he made curſory remarks on the moſt intereſting objects that came in his way, ſhews both the writer and the man in a very advantageous point of view. There is an agreeable variety in theſe Remarks; they are relative to the ſtate of arts, ſciences, agriculture and commerce, geography and politics, in the countries through which he paſſed. In his route from Berlin to Leipſic, and from thence by Francfort, and the ſouthern parts of Germany, to Baſil, he makes ſeveral obſervations which we read with pleaſure in the Journal itſelf, but which would loſe a part of their merit, if ſeparated from their place, their connexions, and the incidents that occaſioned them. We ſhall not therefore follow him ſtep by ſtep, but ſelect here and there ſuch facts and obſervations as we think may prove either agreeable or inſtructive to ſome of our Readers.

The peaſant (ſays M. S.) ſeems more induſtrious and intelligent, the more we advance towards the ſouthern parts of Germany. The villages of Swabia appear to be towns, when compared with thoſe of Saxony and Brandenburg: agriculture in Swabia is upon a much better footing, and the people of that diſtrict are more induſtrious, active, frank, polite, and better clothed than in the northern parts of Germany. Our Author's deſcription of the beautiful and romantic views in the environs of Baſil is quite *pictureſque*. Such alſo is his account of the Canton of Bern, of Morat, Lauſanne, the country of Vaud, Vevay, and the delightful rural ſcenes which tranſport the traveller between Lauſanne and Geneva; as alſo of the little town of Aubonne, from which a view opens of the whole Lake of Geneva, of the Duchy of Chablais, of an innumerable multitude of villages, caſtles, and country ſeats. It was here that *Tavernier* fixed his reſidence, conſidering Aubonne as the moſt beautiful ſpot he had ſeen in all his travels.

At *Nyon* our Traveller viſited M. *l'Eſpinaſſe* [who was formerly honoured with the inſtruction of our preſent Sovereign, and his royal brothers, in experimental philoſophy], and found his collection of inſtruments (many of them his own invention), and his electrical apparatus ſuperior to any that he had ever ſeen. Among other excellent inſtruments in this collection, he obſerved a micrometer, conſtructed after the diviſor in the cabinet of the Duke de Chaulnes. A ſquare line of an inch (Paris meaſure) was divided with this inſtrument, by the point of a diamond, into 400 ſmall ſquares. M. SULZER examined theſe diviſions with a microſcope, and admired their accuracy.

Our

Our Author's account of Geneva is very intereſting. 'It is well known, ſays he, that Geneva is, conſidering its ſize, one of the richeſt cities in Europe. As the traveller approaches it, he perceives marks of its opulence; and its environs announce a people living in the midſt of plenty. I had ſeen, adds M. Sulzer, no where ſo many country-ſeats as in the territory of this little republic: the borders of the lake are covered with them, and they exhibit charming points of view. All theſe rural buildings have an agreeable aſpect; they are neat and elegant in their ſimplicity. Each houſe has a handſome garden: many are ſituated in the midſt of vineyards, meadows, and arable land. Almoſt all are placed with ſuch magnificent views of nature before or around them, as would render the artificial beauties that are often introduced into country ſeats, inſipid. The high roads ſwarm with comers and goers, on horſeback, on foot, in carriages, and are as much frequented here every day, as they are in other countries on holidays. (M. SULZER had lived many years at Berlin.) The lake grows leſs broad as it approaches the city; and this circumſtance contributes greatly to the beauty of the proſpect, which is exhibited by the oppoſite ſide of that noble ſheet of water. The city, which is placed at the mouth of the Rhone, occupies the centre of this magnificent landſcape, and riſes with an air of dignity, in the midſt of its ſmiling territory, ſupported, as it were, by a high mountain, which forms the back ground of the delightful piece. The whole excites a pleaſing and ſublime emotion. The entrance of the city does not by any means counteract this impreſſion. Art, in its ſphere, has done its buſineſs here with elegance, and even with a degree of ſplendor. The city is well built, and there is a good, and often a grand taſte of architecture in the houſes. There is alſo a certain air of liberty, eaſe, and gaiety in the external appearance of the inhabitants, that forms immediately a prepoſſeſſion in their favour. I have ſcarcely ſeen any where, more energy of features, more livelineſs in the eyes, and more expreſſion and ſpirit in the countenance. There are alſo very few places, perhaps none, where a taſte for literary improvement, and the deſire of inſtruction, is ſo generally diffuſed among the common body of the citizens, and where it is ſo uſual to ſee the tradeſman paſſing his evening leiſure in the peruſal of ſome work of merit; ſeveral branches of hiſtorical, literary, and even of philoſophical knowledge, are familiar to this claſs at Geneva, in a degree, that would do honour to perſons of the firſt rank in other countries.'

To this well deſerved eulogy we may add, that, conſidering the extent of this little republic (the number of whoſe inhabitants does not exceed 24000), it contains more eminent men

in certain branches of philoſophy, than any other ſtate in Europe. Natural philoſophy and natural hiſtory have here a brilliant liſt of ſucceſsful votaries, and the names of *Bonnet*, *De Luc*, *De Sauſſure*, the two *Trembleys*, *Le Sage*, *Mallet*, *Bertrand*, *Pictet*, with ſeveral others of great merit, do high honour to the city of Geneva. They indeed confine themſelves pretty much to the branches of ſcience already mentioned. Ancient literature has never been cultivated at Geneva with any remarkable ardor or ſucceſs, and is now leſs in vogue than ever. The caſe is much the ſame with ſpeculative philoſophy, which has only its celebrated *Bonnet (nec pluribus imparem)*, and with the ſcience of natural law and juriſprudence, in which *Burlamaqui* has left no very eminent ſucceſſor, though the preſent inteſtine diviſions of that intoxicated *bee-hive* have produced a multitude of political publications of the firſt merit. Wit, ſagacity, and talent flouriſh in the *hive*, but *wiſdom* is wanting. The fooliſh bees, who had long been conſtructing their delicious honey-combs in one of the faireſt ſpots of nature's domain, are now ſtinging each other to death, and the hive is threatened with ruin. Some ſay that this is partly the effect of the enchantments of an old wizard, who reſided long in their neighbourhood, while others attribute the fatal frenzy to their having drank too plentifully of the ambroſial juice of the flowers that adorned their habitation. *Res adverſas adhuc* TANTUM *tuliſti*, ſays a wiſe man in Tacitus, *Res proſperæ acrioribus ſtimulis animum explorant.*

M. SULZER paſſed ſome days with M. *Bonnet*, at his country ſeat, and counted theſe days among the happieſt of his life. No marvel!—they were kindred ſpirits. He mentions M. *De Luc*, with ſingular expreſſions of eſteem; and no marvel again, for the ſame reaſon. Theſe are philoſophers, who do not paſs their laborious lives in meaſuring and conning over ſome ſcraps and ſkirts of the drapery of NATURE, without any attention to her Author or her deſtination; and therefore in the eye of wiſdom, which looks for objects of hope and felicity to *unfiniſh'd* man, they will always appear to be the *only true* philoſophers:—the reſt is only blowing bubbles with gaudy colours, which break in froth, and are gone for ever!

The Reader will with pleaſure follow M. SULZER in his paſſage through Lyons to the South of France, except when he deſcribes the filth and miſery that degrade the poor inhabitants in many parts of that beautiful region, ariſing from the plagues of deſpotiſm and oppreſſion. Our Author's accounts cannot be *always* either new or highly intereſting, becauſe theſe countries have been ſeen before him by other travellers, and have been well deſcribed; nor can an exact journal *always* exhibit intereſting objects or incidents. His deſcription of the *Hieres*,

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is curious and inſtructive. His account of *Nice* is pleaſing and intereſting in a high degree, and the obſervations he had occaſion to make on the ſtrata of the mountains in his paſſage from Nice to *Monaco*, will not appear unintereſting to the lovers of natural hiſtory. We have ſeen no deſcription of Nice that pleaſed us more than that of M. SULZER. Nothing here has eſcaped his notice. His relation is ample and circumſtantial. His account of the manners, occupations, and character of the people of all ranks, nobility, clergy, citizens, and peaſants; of their dreſs, their tables, their amuſements and feſtivals; of the ſtate of agriculture and commerce; of the productions and natural hiſtory of the country, its political conſtitution, antiquities, air and climate, is curious, inſtructive, and, in many particulars, new. From Nice he returned to Germany by Turin, where he had the honour to be preſented to the king, whoſe affability he celebrates, and whoſe countenance, ſays he, expreſſes ſagacity, a mildneſs and tranquillity of mind, which are too rare in that high ſtation. From Turin, which he deſcribes at ſome length, he proceeded by Novarro, through a delightful country, to Milan; from thence he paſſed the Alps, and relates the circumſtances of this paſſage with the tone and ſpirit of a true connoiſſeur in the grand and majeſtic beauties of nature.

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M— ſo far*.

ART. XIII.

*Lettere Odeporiche * di Angelo Gualandris. In Venezia appreſſo Giambattiſta Paſquali.* 8vo. 1780.

THESE Letters were written in the courſe of a journey, which the Author, under the patronage of the *Riformatori* of the Univerſity of Padua, undertook, in the years 1775—76, and 77. His great object was natural hiſtory at large, but chiefly mineralogy, with all thoſe arts and ſciences which have any reference to it. He has certainly proved himſelf to be well qualified as an obſerver of nature, as well as intimately acquainted with practical chemiſtry, and the great metallurgical operations. With theſe views he travelled in Lombardy, Switzerland, the Palatinate, Germany, France, and Great Britain. We ſhall ſelect ſome of his obſervations as ſpecimens of his manner, and of his *Memorie Minero-Metallurgiche*, which will be ſoon publiſhed; and which, it is expected, will contain acceptable accounts of the mines, manufactories, and founderies which he had an opportunity of ſeeing and examining in this journey.

The firſt letter, dated *Agord*, July 1, 1775, gives an account of the *Valle Imperina*, near *Belluno*, in the Venetian

* *Letters written on the road*, &c.

* Except 1½ p.! in the 1st Sheet, written by Mr Wales, & inclosed in Brackets.

terra firma. It lies between two ſteep calcareous mountains, called *l'Erta*, on the one ſide, and a leſs elevated mountain called *Riva*, on the other. Its conſtituent parts are ſchiſtous, or quartzeous ſlate, which plainly appears to be the baſis of the limeſtone, and is here, as in many other parts of the world, the matrix of copper pyrites. This copper ore is found in different old mines, which are ſtill working, not in veins, but in large irregular heaps; and though reported to have formerly yielded ſome ſilver in the upper part of the valley, yet it it does not at preſent exhibit the leaſt appearance of this nobler metal.

The looſe detached lime, grit, and whetſtones, which the Author obſerved all along the brook that runs in the middle of this valley, and covering the juſt mentioned ſlate mountain, led him to ſuſpect that formerly it was covered entirely with calcareous ſtrata; and that earthquakes, but chiefly the brooks which come from the higher mountains, have interrupted and waſhed them away.

In the following Letter we have a circumſtantial account of the new lake of *Alega*, nine or ten miles above *Agord*. It was produced within theſe laſt ten years by the ruins of a high mountain, which burying ſome country houſes in the adjacent narrow valley, and choaking up the river *Cordevole*, changed part of the valley into a large and deep lake. The mountain ſeems not to have been undermined by the water, for it was only its upper part, projecting and bending over the valley, which gave way and ſlipt down, perhaps becauſe the ſtrata, on which it reſted, and which appear now bare on the top of the mountain, were too much inclined towards the valley. The eroſion of ſome intermediate ſtratum, by a ſpring, which ran from that elevation of the mountain, may have co-operated to bring on this horrid downfal. Whatever was its cauſe, it ſtopped the courſe of the river; which, being kept back, formed a lake, and overflowed and drowned the fields, the foreſts, and every thing under the level of the accumulated ruins, which, at laſt, it reached, and partly waſhed away. The lake which remains is about two miles long, and its greateſt depth about 275 feet. The Author paſſed over it in a barge, and beheld the tops of the drowned foreſt almoſt immediately under the ſurface of the water; he adds, "ſo enormous a baſon of ſtagnating water ſeems to threaten other conſequences, which muſt prove as deſtructive to the upper parts of the river. Running down into the lake upon a greatly inclined plane, it carries large quantities of looſe ſtones, pebbles, and gravel along with it, which, by its diminiſhed velocity, it muſt depoſit above the lake. The effect, already obſerved, has been that the bed of the river is become remarkably higher than it was before; and that a village called *Cav:ile* will, to all appearance, be very ſoon buried in the

the ever encreaſing bed of the river. The ruins, which form the dike or *weir* of the lake, are a kind of compact limeſtone, interſperſed with ſparry glittering particles. Theſe particles are not obſervable in the limeſtone, pebbles, and gravel, which the river depoſits beyond the lake; and which, as far up as *Cavrile*, appear to be mixed with the ſame varieties of whetſtone, and vitreſcent and volcanic ſtones, which I noticed on the road to this place. This proves that the mountains which ſurround the lake, are not all of them calcareous; thoſe on the eaſtern ſide ſeem to be gritty, and thoſe to the weſt of a ſchiſtous argillaceous nature. However that be, this lake, produced by the downfall of part of a mountain, and the concomitant circumſtances, offer a plain explication of the origin of many other lakes; of the accumulation of pebbles, gravel, and ruins, on beds and plains of a quite different nature; of the enormous riſing of the river beds; of the confuſion of pebbles and ruins, which are depoſited without any order of ſpecific gravity; of ſome prodigious heaps of wood, and other vegetable ſubſtances, which appear buried under ground; and of many other curious phenomena. Some mountains are certainly waſhed quite away in that manner; and we muſt never looſe ſight of ſimilar ruins and effects, whenever we venture upon an idea of the former ſtate of the mountains, and of the plains which we inhabit. How different may they not have been from what they are now! Rivers and brooks, that formerly ran over their tops have, by length of time, divided them, and cut and waſhed their way down to the level of the next valley, which however muſt have been the work of many ages."

Let us obſerve here, that applying this rational hypotheſis to the pebble beds about London, and in the ſouthern parts of the kingdom, our imagination is loſt in the long immenſity of ages, which muſt have formed them from the ruins of mountains now levelled to the ground; not to mention that as long an immenſity of ages muſt be ſuppoſed to have accumulated or depoſited theſe mountains at the bottom of the ſea: for their ſole remains, the flints and pebbles, contain a variety of marine bodies.

Though the Thames, and the country around us, be proved to have undergone ſome alterations ſince the times of Ceſar, yet they are inſignificant when compared to thoſe which we muſt ſuppoſe to have happened before.

Lett. 3. In his tour to *Breſcia*, to *Iſeo*, and *Lovere*, in the territory of *Bergamo*, his attention was chiefly taken up with the ſingular nature of the ſtrata which appear in the abrupt mountains along the great lake of *Iſeo*, on the northernmoſt end of which *Lovere* is ſituated. It is ſurrounded with high mountains, that, as far as the Author could obſerve, are calcareous. Their

ſtratification is different; the beds being very thin in ſome, and very thick in others. Some dip to the weſt, ſome to the ſouth. Near a place called *Riva*, they are bent and folded in a moſt ſingular manner; forming, as it were, as many ſharp pyramids. At no great diſtance they are perpendicular. So they are near *Caſtro*. On the oppoſite ſhore they exhibit the ſame phenomena.

Lett. 4. At *Bergamo* the Author examined ſome collections of foſſils of that country. It is famous for iron mines and iron-works; and produces a great variety of marble, pudding-ſtones, and alabaſter.

From *Bergamo* he went two journies along the rivers *Brembo* and *Serio*, which running in narrow vallies, offered to him a new field of obſervations. Neither the mountains nor pebbles exhibited any marks of old volcanos.

Near *Botta* he ſaw again ſuch pyramidal limeſtone ſtrata as he had obſerved on the lake of *Iſeo*.

At *S. Pellegrino* he ſaw the regular ſtratification of the adjacent mountains in the river-bed, and juſtly concluded that formerly they muſt have been connected; in further confirmation of which, he found, on the declivity of one of the mountains, many ſtratified pebbles, which correſponding with thoſe in the preſent bed of the river, furniſh a very ſtrong proof of the alterations ſpoken of in one of his other letters.

Towards *Piazza* the lower ſtrata of a mountain were obſerved to be much inclined, and in that reſpect very different from the higher incumbent ones, which are in an horizontal poſition.

In the iron-works at *Piazza* and *Lecna* they have a ſparry iron ore, which, ſlightly roaſted or calcined, and mixed with ſome limeſtone, was reported to produce about 60 per 100.

On the road to *Fondra* he obſerved, firſt, ſlate mountains, and then enormous ones of red granite rock, beyond which the ſlate, which contains the iron mines, appeared again. "The juſt mentioned granite rock forms very high mountains. It breaks into irregular maſſes, which ſeem to affect a cubic form, though ſometimes they appear to be divided into irregular ſcales. Its texture is a paſte of vitreſcent particles, and of little pebbles of the ſame nature; all wrapt up and glued together by a reddiſh paſte, in which ſcarce any fragment of ſhirl, mica, or other black ſubſtances, is to be diſtinguiſhed. Nor do theſe rocks convey any idea of ſtratification. They have there a provincial name, and are called *Seris*; and ſome naturaliſts have miſtaken them for the red *granitello*, which widely differs from them in colour as well as other properties.

On another excurſion to *Bonaiù*, in the valley *di Scalve*, the Author obſerved, on the top of a calcareous mountain, at a place

place called *i Zappei della Cagna*, ſtratified ſparry rock dipping to the ſouth, and ſoon after appearing in a perpendicular ſituation. The ground ſounds hollow, and corroborates his notion, that ſome downfall and ruin of higher mountains muſt have taken place. Further, on the top of mount *Trinita*, which is granite rock, it plainly appeared that part of an oppoſite calcareous mountain had tumbled down on this, and buried part of it.

At *Bondione* they obtain ſky blue iron ſlags from a particular iron ore of *Mont Pomel.* He concludes this letter, with ſumming up the reſult of his orological obſervations in theſe vallies, viz. that rivers, "running between two mountains have often divided them, and cut and made their own beds; that water was to all appearances the greateſt deſtroyer of mountains; that the maſſes and elevations are conſtantly diminiſhed by the rivers; that mountains, being thus leſſened, and the vallies raiſed, it is no eaſy matter to form an idea of the prior ſtate of the plains; and that the direction of mountains is very often croſſed by that of others; that orological maps would greatly facilitate this kind of enquiry,"—for which a man's life is rather too ſhort.

On his journey to *Zurich* in *Switzerland* [Letter 5.], he obſerved, that the flat country between *Bergamo* and *Milano* is an immenſe level of pebbles, which from *Canonica* to the *Adda* is, in many places, ſcarce covered with any ſoil. Towards *Milano*, and thence to *Como*, the ground, though better clad with ſoil, is of the ſame nature. Near *Como*, a ſtratified mountain ſeems to have undergone either a violent ſhock of an earthquake, or the alterations ariſing from a downfall; becauſe its ſtrata appear in ſome places overturned, hanging perpendicular, or otherwiſe inclined. He had no opportunity to enquire into the origin of the famous *Lago di Como*; but hopes that the celebrated *Spalanzani*, who examined the adjacent mountains, may perhaps have found amongſt them ſome relative phenomena.

On the lake of *Lugano* he obſerved ſome ſingular ſtratifications, viz. ſome of "a circular form, leaning, as it were, with their convexity againſt the ſide of a mountain."

Beyond *Lugano* the mountain is hard, ſchiſtous, or ſlate rock, which higher up ſeems to be, or to degenerate into, granite, and continues as far as *Bellinzona* more or leſs mixed with yellow, white, or black mica. Where the yellow mica diſappears in the mixture of the granite, it begins to break into cubic, rather than into flaty or ſcaly forms.

Near *Stalveder* the granite ſeems to be ſtratified, and in perpendicular beds. There can be no doubt about its ſtratification, and ſcaly or ſlaty nature; as even the cottages of the inhabitants are ſometimes covered with large and natural rude plates of granite.

At *Airolo* he examined the collection of a rock chryſtal merchant, in which he obſerved not only a great variety of curious cryſtals, but likewiſe of green and black ſhirls in different forms and matrices. Some had a matrix of ſlate, which at the ſame time contained mica and garnets. There was a great variety of garnet dodecaedrons, of amianth, of aſbeſt and of talc, all found in the neighbouring higheſt Alps, towards *S. Gothard.*

Near *Airolo* the road is almoſt entirely paved with white quartz, filled with ſhirl, or with garnet ſlate.

On the aſcent to *S Gothard*, beyond *Airolo*, the mountain is ſlaty; but the top, or the plain of *S. Gothard*, is granite of a milk white colour, with black or greeniſh ſpots of mica. This continues of the ſame nature a long way, on the deſcent on the other ſide; which downwards exhibits the ſame ſucceſſion of granite, ſlate, and limeſtone.

Although we have been at the trouble to climb up with the Author to this remarkable and high part of the Alps, from which many rivers run to oppoſite parts of the compaſs, we muſt deprive ourſelves of the pleaſure of attending him through thoſe many pictureſque and romantic ſcenes (which he, and many other travellers, have ſeen and deſcribed) between *S. Gothard*, downwards to *Altorf*, *Zug*, and *Zurich.*

Of the laſt mentioned place the Author gives us a deſcription which does credit to his heart and underſtanding; and which is very honourable to the many worthy and learned inhabitants with whom he was acquainted there. The botanical garden, that for œconomical experiments, the muſeum of theſociety of natural philoſophy, thoſe of Meſſ *Geſner*, *Schultes*, *d'Hottingen*, *Hirzel*, &c. the peat pits in the neighbourhood, and the ovens for drying corn, were the chief objects of his attention. We ſee with concern that Mr. *Geſner* has dropped his idea of a great botanical work, in which he intended to deſcribe all the plants according to the Linnean ſyſtem, and to have engraved the conſtituent parts and characters of every ſpecies. He ſaw the original drawings of this botanical work, with a great collection of drawings for other parts of natural hiſtory, in Mr. *Geſner*'s library. Among other obſervations on this little republic, and its patriotic and polite inhabitants, he remarks, p. 76, That " this ſmall republican ſtate, which produces no overgrown and purſe proud Mecenas's, and is not led away by ambition; which is under the neceſſity of looking on commerce and trade as the chief ſupport of its inhabitants; and in which every ſubject, after having anſwered the calls and duties of his place, may indulge his own mind, and ſpend his time as he pleaſes.—That this little ſtate abundantly proves, that principles, wiſdom, and diſpoſition determine the merit of individuals, and of whole nations and governments."

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At *Bern*, where he ſtopped but a few days, he was not leſs pleaſed and entertained by the learned patriots, to whom he had acceſs. *Haller*, though almoſt reduced to the laſt extremity by that complaint, which ſoon after brought him to the grave, received him in his ſtudy ſurrounded with books, and in as warm purſuit of knowledge and improvement, as if he had been but a young candidate for fame. He obſerved to him, that in Switzerland "thoſe farmers are the pooreſt, who, poſſeſſed of the richeſt ground, plant it with vines; that thoſe are richeſt who have the pooreſt ground and cultivate it for paſture, or grazing; and that there was another claſs between rich and poor, who hold a middle kind of land, and cultivate it for corn.

At *Baſel* on the *Rhine* he ſaw that famous Letter Foundery, whoſe intelligent director has inſerted in the Yverdun edition of the French Encyclopedia, a valuable diſſertation on various improvements of the art of caſting types. He mentions the China manufactory at *Straſburgh*; but was not at all pleaſed with the Artiſts making a myſtery of their furnaces.

On leaving *Switzerland*, one of the moſt mountainous parts of the world, he ſums up the general reſult of the orological obſervations he made there; which, backed and ſupported by *Scheuchzer*'s map of Switzerland, led him to conclude, that the Helvetic mountains have no regular direction, and that the rivers, following their direction, theſe mountains muſt be looked upon as having determined their courſe from the beginning; which perfectly agrees with our own obſervations, and is not very favourable to certain cloſet-philoſophers, who have not ſo much as dreamed of that irregularity, becauſe they examined the mountains only as they ſaw them on maps.

We cannot follow our traveller to *Manheim*, to the quick-ſilver mines, and the Agate manufactories in the Palatinate, leſt we ſhould be drawn into too many orological details; yet to oblige the few qualified mineralogiſts, we obſerve, that his hypothetical explication of the origin of the *Variolites*, ſo common in thoſe parts, and of the ſtratification between *Kirn* and *Oberſtein*, though, perhaps, a little too minute, is accurate and ſatisfactory.

We haſten with him to *Paris* and *Verſailles*; of the pleaſures, faſhions, and entertainments of which polite places, the common travellers, and chiefly the French themſelves, tell us, and have told us ſo much, that we are the more obliged to Dr. *Gualandris* for paſſing them over in ſilence, and for having entertained us rather with good accounts of more intereſting, *i. e.* ſcientifical ſubjects. It would be impoſſible for us, and inconſiſtent with the confined limits of a Review, to enter here with him into details of the numerous magnificent collections of natural hiſtory which he ſaw and admired in both places, as noble

ble inſtances of that literary luxury now in faſhion among the great and the opulent; nor can we ſpare room enough for many of his accounts of the preſent purſuits of the moſt celebrated French chemiſts and naturaliſts.

It is very ſingular, that there ſhould be ſo ſtriking a ſimilarity between the nature, matrix, and accidents of the numerous Swediſh iron ores, and thoſe which are found in *Corſica*. Mr. *Romè Deliſle* firſt obſerved this in an excurſion to *Corſica*; and this Author found it verified in the noble cabinet of Prince *Condè* at *Chantilly* (which is remarkably rich in Swediſh foſſils), and in ſome others at *Paris* and *Verſailles*, which abound in the productions of Corſica.

The Author's apology for the filthy river water they drink and generally uſe at Paris, ſeems to be ſatisfactory, and applicable to what the Engliſh drink near London-Bridge: tho' we own, that when formerly we heard the Pariſians praiſe their naſty water, we could not help aſcribing it to that narrow-minded partiality for their own country, which is not the moſt amiable trait in their character, and which expoſes them ſo often to contempt and ridicule; nor are we yet convinced that filth, however innocent, and however decompoſed, can make any water the more palatable and wholeſome.

The Author's account of the *Plaſter quarries* in *Montmartre*, is ſuch as might be expected from ſo good a naturaliſt. In the clay-pits cloſe by, near *Zentilly*, he obſerved "that the clay does not exhibit there any internal mark of ſtratification, or of ſucceſſive accumulation, but that in the galleries, which are driven into it, it breaks down from the roof in large concave ſcales, ſo exexactly inſerted one into another, that their inſertion is ſcarce diſtinguiſhable. The common depth of theſe concave ſcales is about one foot; and, what is ſtill more remarkable, their ſurface is externally ſtriped and ſtriated: both which configurations the Author aſcribes to the particular nature of this kind of clay; in the ſame manner as many other ſubſtances of the mineral kingdom, earths, clays, ſalts, ores, and ſtones, have each a natural tendency to break rather in one determined form than into another."

We acquieſce with the Author in his warm affectionate reſpect for the amiable character and the uncommon ingenuity of Mr. *Sage*, the celebrated chemiſt; and we are ſorry to be convinced, with him, that his brother chemiſts in France have been rather too cautious in reſpect to ſome of his very curious and intereſting diſcoveries and obſervations. Theſe are here partly reviewed p. 153, 169, and chiefly from p. 173—202, 216—219. where the Author very warmly eſpouſes the cauſe of Mr. Sage, in reſpect to his ſyſtem of mineraliſing ſubſtances, and to his method of parting the gold from auriferous pyrites, rather by the

nitrous acid than by vitrification. He ſeems to have been very careful in repreſenting the undecided controverſy between Mr. *Sage*, and ſome other philoſophers about *fixed Air*, which we could wiſh to ſtate here in the faireſt and fulleſt manner; that we may not be accuſed of any national partiality for ſome of our beſt modern experimental philoſophers, who were the firſt and moſt ſucceſsful diſcoverers in this new branch of natural philoſophy: but we muſt confine ourſelves to a few remarks.

The queſtions chiefly to be examined are, 1. whether with ſome of the ancients, we muſt conſider this elaſtic fluid as air, and as an indeſtructible element, which is eſſentially the ſame in all the bodies from which we expel it, and in the compoſition of which it enters as a ſubſtantial part for their coheſion? Or 2d, whether this elaſtic fluid be of a different nature in different bodies, though always to be conſidered as one of their eſſential parts? Or 3d, Whether it be only a mixture of common air, and of ſome particles of thoſe bodies from which it is expelled? We own, that after ſo many experiments on this delicate ſubject, we are ſtill far from being fully enabled to decide upon it. There are yet difficulties and perplexing equivocations and contradictions on every ſide. If elaſticity be the characteriſtic quality of air, how can we form an idea of its fixity? The Author therefore adopts Mr. *Sage*'s opinion, "that this elaſtic fluid does not pre-exiſt in a ſtate of fixity, but is *produced* or *generated* in the fermentations, effervescences, and decompoſitions, whatever be the means employed; and he frankly declares, that there is but one kind of air, which is apt to be alternately compounded and decompounded; and which, being a fluid, is accordingly apt to diſſolve an infinite number of ſubſtances, and when diſſolved, to carry them along in the ſame manner as water, oils, and other fluids, which we make uſe of for ſolutions." What can poſſibly be ſaid in favour of this opinion, and of Mr. *Sage*'s hypotheſis of phoſphoric and marine acid, Dr. *Gualandris* has ſaid, warmly, modeſtly, plainly, in ſhort, in ſuch a manner as does credit to his manners, underſtanding, and chemical knowledge; and which muſt recommend him to the candid peruſal of every real friend of ſcience.

The Author's accounts of the chalk-pits near *Calais*, and on the oppoſite Kentiſh ſhore, and of the flints horizontally diſpoſed in their ſtratifications; and what he ſays of the cabinets and collections of natural hiſtory, and of the learned here at London, is leſs intereſting to Engliſh than Italian Readers; but his obſervations on the mines about *Matlock*, near *Aſhover*, and on *Ecton* mine, are curious, inſtructive, and will ſerve as confirmations of Mr. *Whitehurſt's* ſections of the Derbyſhire mountains. Theſe, though not then publiſhed, he mentions, and he owns, in many places, that ſome rocks in the Derbyſhire

mountains

mountains are volcanic productions; which we hope will tend to reconcile our anti-volcanic mineralogiſts with Mr. *Whitehurſt*'s notions concerning the *Toadſtone*.

The Author's hypotheſis reſpecting the lead fiſſures in Derbyſhire, which are horizontally interrupted by the toadſtone, is certainly inadmiſſible. He imagines that there was a ſucceſſive depoſition of alternating lime and toadſtone ſtrata; and that the calcareous ones only broke into fiſſures, which were ſucceſſively filled up with ore, and its concomitant paraſitical criſtallizations of ſpar and fluor. But how came it to paſs that the calcareous only broke into fiſſures, and that the toadſtone ſtrata remained unaffected? How can he account for the conſtant, regular, and perpendicular run of the veins in ſucceſſive limeſtone ſtrata, though horizontally cut off and interrupted by toadſtone beds?

We are not better ſatisfied with his conjectures on the origin of fluor, which in Derbyſhire is always found depoſited in the fiſſures, mixed and embodied with ſparry criſtallizations. We own that both are paraſitical, and ſeem to have been depoſited, where they are, at the ſame time, and by the ſame operation, the ſame fluid, or ſolution; we are convinced that the ſparry criſtallizations, being of a calcareous nature, are ſufficiently accounted for by the limeſtone beds in which they are found; but it is impoſſible for us to conclude with him, "that the ſame limeſtone ſolution ſhould have depoſited the fluor, which is of a quite different vitreſcent nature." I found, ſays the Doctor, no vitreſcent fuſible rocks whoſe ſolution, mixed with that of the limeſtone, could have accounted for theſe vitreſcent fluor cryſtals. This was certainly his own fault, or rather a conſequence of the hurry in which he made his obſervations in Derbyſhire, or in which he wrote them down. The grit ſtrata, which are uppermoſt in Derbyſhire, and the ſhale, clay, and toadſtone beds, which interchange alternately with thoſe of limeſtone, and which he has mentioned himſelf, p. 288, are certainly not calcareous but vitreſcent.

Ra-pe.

ART. XIV.

Oſſervazioni del Sig. Dottore Angelo Gualandris ſopra il Monte Roſſo uno degli Euganei del Padovano—dirette al Sig. Giovanni Arduini. Padova. 4to.

THE Author publiſhed this pamphlet before the appearance of his mineralogical travels; and we take notice of it, becauſe this well-qualified obſerver's account of *Monte Roſſo* is drawn up with the niceſt attention to ſome circumſtances, which ſeem not to have been properly attended to in Mr. *John Strange*'s diſſertation on the ſame ſubject, *Phil. Tranſact.* 1775.

Monte

Monte Roſſo conſiſts partly of ſtratified natural ſtone pillars, which appear on different elevations, and reſt on, and are interrupted by, large rocks of the ſame ſubſtance that have no determined form. They are moſt of them pentagonal; but many have ſix, and ſome have four ſides. They are of different lengths, and are articulated, as it were, in the ſame manner as the baſalt-pillars in the Iriſh Giant's Cauſeway; nor are they more regular in their articulations, as theſe Iriſh baſaltes ſeem to be, which according to our Author, and, as he ſays, contrary to many ſpecimens, have been miſrepreſented in the prints and deſcriptions, as being all of them broken into regular convex and concave joints exactly fitting each other. Many of thoſe in *Monte Roſſo* are flat in their articulations; ſome are ſlanting; ſome are rudely convex and concave; ſome are pyramidal; but whatever be the form of their articulations, the upper part conſtantly fits the under part of the pillar to which it belongs, or on which it reſts. Theſe ſtrata of pillars reſt, or are incumbent on, large rocks of the ſame ſubſtance, which have no form, but what the accidental breaking, or the eroſion of the weather ſeems to have given to them. At the foot of the mountain is a large quarry, where the ſame rock is dug from compact vertical veins, or coherent ſtrata, which ſeem to have been brought into a vertical poſition. In ſhort, the ſame kind of rock appears in *Monte Roſſo* under very different forms, in the ſame manner as the Baſaltes has been obſerved to appear in many places; both kinds of rock have a columnar form only in certain ſituations.

That of *Monte Roſſo* is a kind of granitello, which is partly attracted by the loadſtone. It conſiſts of a pale or aſhcoloured hard paſte, mixed with ſome whiitiſh regular cryſtallizations, ſome hexagonal mica, and ſome ſmall priſms of black ſhirl. Sometimes it is tinged with a fine greeniſh colour. Beſide theſe cryſtallizations it contains ſome ſtones, which Dr. *Gualandris* looks upon to be adventitious, and to have pre-exiſted before they were wrapt up in it. They are of two different kinds. Some have no regular form, and ſeem to be fragments of a ruſty lava; ſome very common ones are ſmall yellow and greeniſh cryſtallizations, of the form of a parallelopiped. The marine ſalt and calcareous ſpars are the only ſubſtances which are known to appear under that form; yet theſe cryſtallizations ſeem to be of a different nature. They are not acted upon by acids, they reſiſt the blow pipe, and differ from the marine ſalt and calcareous ſparry cryſtals, in being longitudinally ribbed or ſtriped; and as they are found in the ſame paſte with black ſhirl, the Author is of opinion, that they are of the ſhirl kind; for the ſupport of which ſuppoſition, he might have mentioned the electrical ſhirl from Saxony, which is ribbed and ſtriped in the ſame manner, though its form reſembles rather a flattened cylinder.

without

Without entering into a more minute detail of the nature of theſe ſingular rocks, the Author ſuſpects, and very juſtly in our opinion, that the columnar, as well as the other forms of this granitello, are to be looked upon as natural breaks or fiſſures, determined partly by the nature of its conſtituent parts, and partly by its reſpective ſituation, or other particular circumſtances. By theſe he underſtands a more or leſs ſudden cooling of the whole maſs; which he, like other Italian naturaliſts and obſervers, ſuppoſes to have been in a ſtate of fuſion. He had obſerved in the iron founderies at Bergamo, that maſſes of caſt iron, when heated and thrown into cold water, will crack and break; and that the ſame iron maſs exhibits a very various internal texture: the inner parts appearing as it were, fibrous, ſtriated, and cryſtallized; whereas the more external parts are ſimply granulated, and in leſs determined forms.

We remember to have read a nearly ſimilar hypotheſis on the origin of the columnar Baſaltes *, which, ſince its publication in England, has been adopted in France by M. *Fougeroux*, in his late publication on the ancient volcanos in Auvergne; and we cannot deny it our aſſent, becauſe it is eſtabliſhed upon facts and analogy. If the whole maſs of granitello in Monte Roſſo had been in fuſion, and cooled at once, its inner parts alone muſt appear to be a group of columns; which not being the caſe, the Author very judiciouſly doubts, whether Mr. *Strange*'s hypotheſis is admiſſible, ſuppoſing that the whole maſs had undergone a local ignition and alteration in the ſame place where we ſee it at preſent; and he is of opinion, that it was accumulated by ſucceſſive volcanic eruptions: which however the Author ſhould have more carefully proved than by bare aſſertion; for he could not be ignorant, that homogeneous maſſes of clay or ſtone, brought to a ſtate of liquidity by water or fire, and hardening again by drying or cooling, will equally affect a variety and regularity of forms.

We are as little ſatisfied with his aſſertion concerning the parallelopiped cryſtals in the maſs of the granitello, which he is poſitive in declaring to be adventitious pre-exiſting bodies in the ſame form we ſee them, before they were wrapt up in the molten granitello or lava maſs. Meſſrs. *Ferber*, *Raſpe*, and Sir *William Hamilton*, had looked upon different ſpecies of ſhirl cryſtallizations, which are found in the Veſuvian and other lavas, not as having pre-exiſted, but as having been produced in their cooling and congealing maſſes. We muſt refer to their publications *, where they have ſpecified thoſe particular ſhirl kinds, and the reaſons and grounds of their hypotheſis. As far we re-

* See Raſpe's Account of ſome German Volcanos. London. 1776. and our Review, vol. liv, p. 475.

member,

member, they never aſſerted that the granitello of *Monte Roſſo* and the Veſuvian lavas are of the ſame kind; or, in particular, that the ſtriated parallelopiped cryſtals of Monte Roſſo ought to be ranked amongſt their volcanic ſhirls. Yet Dr. *Gualandris* charges them with that aſſertion, and boldly denies his aſſent to their hypotheſis on the formation of other ſhirl kinds, though it is well ſupported by ſome facts they have given, and by the analogy of certain cryſtallizations, which are undeniably produced in the melting pots of the glaſshouſes. They were firſt obſerved by Mr. *Keir*, who deſcribed them in a diſſertation, which, about two years ago, was preſented to the Royal Society. Dr. *Gualandris* had an opportunity of ſeeing many ſamples of theſe glaſs cryſtallizations in Mr. *Greville*'s noble collection in London. He himſelf agrees, that "to all appearances they are certainly produced in the maſs of glaſs when in a ſtate of fuſion; yet he will not allow the above naturaliſts to draw from them any analogical concluſions in favour of their volcanic cryſtallizations: becauſe, ſays he, the glaſs, which ſerved as a menſtruum in the cryſtallization of theſe figured bodies was homogeneous, and in a perfect ſtate of fuſion; whereas the lavas are rather hetorogeneous mixtures, ſcarce affected by the fire, and at moſt a thick paſte, not at all reduced to any tolerable degree of liquidity, which the cryſtallization abſolutely requires, and which to ſuppoſe, he declares to be againſt reaſon and common ſenſe." We have nothing to reply to all this, except that glaſs is no more a homogeneous mixture and body than lavas are; that the very cryſtallizations produced in it prove it to conviction; that the mixture of lavas evidently is and muſt be very various; that the poſſible degree of their liquidity, which has not yet been aſcertained, is and muſt be in proportion to the degree of heat, which they may undergo; and that we cannot take upon us to agree with Dr. *Gualandris* in his round aſſertions, which he himſelf acknowledges to be unſupported by chemical experiments.

We are better and fully ſatisfied with his very ſenſible remarks on the difference of granite and granitello; and we congratulate the univerſity of Padua on having produced ſo valuable and learned an obſerver of nature.

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* See Ferber's Mineralogical Travels to Italy, Raſpe's Account of ſome German Volcanos, and Sir William Hamilton's *Campi Phlegræi.*

Ra-pe.

ART.

ART. XV.

Diſſertatio Phyſiologico-Medica Inauguralis, De Menſibus ex Materia quadam peculiari, Ovariis Societa, oriundis. A Phyſiologico-Medical Inaugural Diſſertation, on the Origin of the Menſes, from a certain peculiar matter, ſecreted by the Ovaries. By Phœbus Hetzerus Themmen, of Groningen. 8vo. Leyden. 1781.

THE ingenious Author of this theſis, after propoſing and attempting to overthrow the common theories of the menſtrual flux, offers his own, which is, that a certain matter ſecreted by the ovaries, and periodically deſcending into the uterus, is the cauſe, as well of the venereal appetite, as of the menſes. The ſanguineous diſcharge therefore, according to him, is only a kind of concomitant circumſtance, and not eſſentially neceſſary to the fulfilment of this great law of the female conſtitution. This is not the place for entering into particular arguments for or againſt our Author's hypotheſis; which, probably will ſhare the fate of many an ingenious conjecture, not thoroughly compatible with the phenomena of nature.

A.

CORRESPONDENCE.

R. D. obſerving in the Review for November laſt, a note from our correſpondent—Nimrod,——obſerves, that Peter Beckford, Eſq; of Stapleton, Dorſetſhire, ſon of Julinis or Julianus Beckford, and nephew of the late celebrated Alderman of that name, the profeſſed author of *Thoughts on Hunting*, is not the Mr. Beckford to whom Mr. Brydone addreſſes his letters, nor are they relations.

He is ſon-in-law of the preſent Lord Rivers, and has prefixed to his book an exceeding good print of Mrs. Beckford, his wife, one of the handſomeſt women, and beſt of wives, in the Weſt of England. R. D. expreſſes his concern that we ſhould have been miſled, by a correſpondent, in a deſcription of the *real* or *profeſſed* author of *Thoughts* on Hunting, and he remarks that there is another book on the ſame ſubject, (but rather on hare hunting) of which the Review has not, as yet, taken any notice. That Mr. B. of Stapleton is undoubtedly the author of Thoughts on Hunting; but he does not hear who is the author of that other work. 'If ſays he, you think proper to aſcertain the author, by diſtinguiſhing him from William Beckford, Eſq; of Eſſex, you may do Mr. Peter Beckford a favour, by aſcribing to him the honour of this firſt eſſay on this ſubject in Engliſh, and oblige a conſtant reader."

*** *We ſhall ſpeedily give ſome account of the book on Hunting, alluded to in the latter part of the foregoing letter. It is entitled* 'Eſſays on Hunting.' Southampton, printed.

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